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EXTENSION OF POST-THAW-WASH STORAGE OF GLYCEROL-FROZEN RED BLOOD CELLS AT 4 C IN 0.9% SODIUM CHLORIDE-0.2% GLUCOSE SOLUTION

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INTRODUCTION

The FDA has approved the protocol by which red blood cells can be frozen with 40% W/V glycerol, stored at -80 C, deglycerolized using the Naval Blood Research Laboratory (NBRL) Standard Operating Procedure for non-rejuvenated red blood cells, and stored in a 0.9% sodium chloride-0.2% glucose solution for 24 hours at 4 C. The Department of Defense (DOD) has approved this method for the deployment of frozen blood banks where glycerol-frozen red blood cells are stored at -80 C for 10 years. The NBRL has collected the enclosed data to support the extension of the postthaw storage period from 24 hours to 5 days. We are requesting the extension of the post-thaw-wash storage period for red blood cells from 24 hours to 5 days in view of the fact that the FDA has approved the storage of platelets at 22 C for 5 days, and the potential for contamination is similar for both.

APPROACH

1. The NBRL assessed the in vivo survival of autologous deglycerolized red blood cells after storage for 3 days, 5 days and 7 days in a sodium chloride-glucose solution from measurements of 24-hour posttransfusion survival value, function, and hemolysis. Following 4 C storage for 3-4 days, 5 days, and 7-8 days in a sodium chloride-glucose solution, the deglycerolized red blood cells were centrifuged to remove the supernatant solution containing the supernatant hemoglobin and adjust the mean hematocrit value from 40 V% to 80 V% prior to transfusion.

2. The NBRL also assessed the in vitro hemolysis of deglycerolized red blood cells stored in sodium chloride-glucose solution at 4 C for 7 days prior to and following centrifugation to remove the supernatant hemoglobin prior to transfusion.

3. Studies also were done to determine how many units of glycerol-frozen red blood cells could be thawed and deglycerolized in a specific time frame by military medical technicians with minimal training. The goal was to produce as many units as possible in a military work day and to test the quality and sterility of these units. These studies are referred to as "Productivity Studies" by the Department of Defense Blood Program Office.

METHODS

The red blood cell units were frozen with 40% W/V glycerol, stored at -80 C, and deglycerolized and stored in a 0.9% sodium chloride- 0.2% glucose wash solution using the NBRL Standard Operating Procedure for non-rejuvenated red blood cells. This procedure has been approved by the DOD as the method to freeze and store human red blood cells at -80 C for 10 years.

In vivo studies

Twenty eight units of autologous red blood cells were collected in CPDA-1 and stored for 3 to 6 days at 4 C prior to freezing. Following thawing and deglycerolization, the red blood cells were stored for 3 days, 5 days, and 7 days in sodium chloride-glucose solution. Deglycerolized red blood cells stored at 4 C for as long as 7 days were centrifuged to remove the supernatant solution and adjust the hematocrit from 40 V% to 80 V%. Ten ml aliquot samples of the red blood cells were labeled with 51Cr for measurements of 24-hour in vivo survival, and samples were taken for in vitro recovery, supernatant hemoglobin, supernatant osmolality, intracellular and extracellular sodium and potassium, MCV, MCHC, MCH, red cell 2,3 diphosphoglycerate (2,3DPG), adenosine triphosphate (ATP) and P50 measurements.

In vitro studies

Red blood cells were collected in CPD or CPDA-1, stored for 3 to 6 days at 4 C and frozen with 40% W/V glycerol. Following deglycerolization, samples were collected from 33 units at various times throughout the 7-day post-wash storage periods for measurements of supernatant hemoglobin, supernatant osmolality, intracellular and extracellular sodium and potassium measurements and red cell MCV, MCHC, and MCH. Measurements were made of the percent hemolysis in the red blood cells with a hematocrit value of 40 V% after 1, 3, 4, 5, and 7 days of 4 C storage in a sodium chloride-glucose solution. The percent hemolysis was also calculated following centrifugation to concentrate the red blood cells to a hematocrit value of 80 V%.

In vivo survival measurements

The 28 healthy male volunteers who participated in the in vivo survival studies gave their informed consents in accordance with the Institutional Review Board for Human Research at Boston University Medical Center. The red cell volume was estimated in each volunteer indirectly from the measured 125-I human albumin plasma volume and the total body hematocrit (peripheral venous hemateocrit multiplied by

0.89) (Valeri et al, Transfusion 24:105-108, 1984). To measure red cell survival, a 10 ml sample from the autologous unit of deglycerolized red blood cells was radiolabeled with 51-Cr disodium chromate (ER Squibb and Sons) and reinfused into the volunteer. The 24-hour posttransfusion survival of 51-Cr labeled autologous red blood cells is reported.

In vitro measurements

In the autotransfusion studies and the in vitro studies, the microhematocrit method was used to measure the hematocrit of the deglycerolized red blood cells after 7 days of 4 C post-wash storage in a sodium chloride-glucose solution. In the Productivity Studies, the hematocrit was measured in the Coulter JT Counter. Hemoglobin was measured using a hemoglobinometer (Coulter Electronics Model ZBI); supernatant osmolality was measured using a wide-range osmometer (Advanced Instruments); and supernatant hemoglobin was measured using the cyanmethmoglobin technique with a spectrophotometer (Spectronic). Electrolytes were measured using a flame photometer, and red cell 2,3 DPG and ATP were assayed fluorometrically (Keitt, Am. J. Med. 41:762-785, 1966). Red cell P50 was determined from the oxyhemoglobin dissociation curve produced by the Hemox Analyzer (TCS Medical Products Co., Huntingdon Valley, PA) (Asakura and Reilly, Oxygen Transport, In: Red Blood Cells, edited by C. Nicolau, 1986).

Freeze-thaw in vitro recovery was calculated from the supernatant and cellular hemoglobin and hematocrit measurements. Freeze-thaw-wash recovery was calculated from the total cellular hemoglobin in the washed unit divided by the sum of the total hemoglobin in the washed unit and the total hemoglobin in the waste.

Percent hemolysis was calculated from the total supernatant hemoglobin as a percent of the total hemoglobin in the unit before and after the red blood cells were concentrated by centrifugation in accordance with the Standard Operating Procedure manual (SOP). After post-wash storage at 4 C for as long as 7 days in a sodium chloride-glucose solution, the red blood cells were concentrated and the supernatant solution containing supernatant hemoglobin was removed to increase the hematocrit from 40 V% to 80 V% prior to transfusion. Studies done to determine the effects of centrifugation on the supernatant hemoglobin level indicate that there was no significant change in the supernatant hemoglobin concentration or extracellular potassium after centrifugation (Table 5).

Productivity Studies

Two studies conducted at the Naval Blood Research Laboratory referred to as "Productivity Studies", evaluated the ability of military medical technicians familiar with routine blood-banking procedures but not familiar with the NBRL deglycerolization procedure, to deglycerolize frozen red blood cells: the number of frozen red blood cells processed in a specific length of time was evaluated. Red blood cell concentrates prepared from units of CPDA1 collected whole blood were stored at 4 C for 14 to 35 days prior to glycerolization and freezing in the original 800 ml PVC plastic bag using the Naval Blood Research Laboratory SOP. The frozen glycerolized red blood cells thawed and washed in the two productivity studies had been frozen as nonrejuvenated red blood cells at the Naval Blood Research Laboratory. The first day of the study, the technicians were shown the procedure and were allowed to perform the deglycerolization. On days 2 through 4, the technicians were told to deglycerolize as many units as possible.

a) **Productivity Study 1:** Each of 6 untrained military personnel were able to operate simultaneously two Haemonetics Cell Washers throughout a 3-day period working 11-12.5 hours per day.

b) **Productivity Study 2:** Three military personnel who participated in Productivity Study 1 were able to operate 3 or 4 Haemonetics Cell Washers simultaneously throughout a 2-day period working 11 hours per day.

The operational conditions for these studies were as follows:

1. Use of personnel untrained in the deglycerolization procedure.

2. Time constraints/competition: personnel were instructed to deglycerolize as many units of blood as possible.

3. Extended work day: personnel worked up to 12.5 hours per day, with only one 30-minute lunch break.

4. Operation of multiple cell washers: personnel operated as many as 4 cell washers at one time.

5. Sterile docking was not utilized: wash solutions were spiked into the primary bag.

6. Washing bowl with an internal seal was utilized.

7. Sampling of deglycerolized red blood cells for bacteriologic cultures: deglycerolized red blood cells were sampled for bacteriologic cultures using a needle and syringe on the day of washing (Day 0) and Day 14 following storage at 4 C in a sodium chloride-glucose solution.

For both productivity studies, the red blood cells were collected, frozen and deglycerolized according to the NBRL Standard Operating Procedure. Sterile-docking was not utilized. Following deglycerolization of the red blood cells, samples were collected by NBRL personnel by aseptically inserting a sampling site coupler into one of the entry ports of the bag containing the deglycerolized red blood cells. Measurements were made of hematocrit, hemoglobin concentration, supernatant osmolality, supernatant hemoglobin, and aerobic and anaerobic bacterial cultures.

In vitro measurements during productivity studies

Hematocrit value, hemoglobin concentration, supernatant hemoglobin concentration and supernatant osmolality were measured as described above. In vitro recovery of red blood cells was calculated by dividing the total cellular hemoglobin in the deglycerolized red blood cells by an estimated pre-freeze total hemoglobin of 60 g.

Bacterial cultures

Aerobic Culture

Blood agar plates: A drop of red blood cells was placed on each of the four quadrants of the two blood agar plates, and the plate was tilted to allow each drop to streak each quadrant. This procedure was performed in duplicate and required a total sample volume of 0.5 ml.

Aerobic and Anaerobic Culture

Thioglycollate broth tube: A 2 ml volume of deglycerolized red blood cells was added to each of 2 tubes containing 17.5 ml of thioglycollate broth. The tube was either aseptically vented (aerobic) or not vented (anaerobic).

Both the blood agar plates and the thioglycollate broth tubes were incubated at 37 C and examined daily for bacterial growth for 7 days.

RESULTS

Table 1 reports the mean, standard deviation, and the minimum and maximum values of the in vivo and the in vitro measurements for the 28 units of autologous deglycerolized red blood cells stored at 4 C in a sodium chloride-glucose solution for 3, 5 and 7 days. The units are listed individually in Tables 2A through 2E.

The mean 24-hour posttransfusion survival was 83% for deglycerolized red blood cells stored at 4 C for 3 days, 86% for deglycerolized red blood cells stored at 4 C for 5 days, and 77% for deglycerolized red blood cells stored at 4 C for 7 days. The in vitro recovery of the 28 units ranged from 79 to 95%, and the mean index of therapeutic effectiveness was 73% for the 28 units. The supernatant hemoglobin concentration increased with post-thaw storage from a mean of 794 mg/dl for day 3 of storage to 1152 mg/dl for day 5 of storage and 2114 mg/dl for day 7 of storage. The mean % hemolysis estimated from the supernatant hemoglobin concentration, total hemoglobin concentration and the hematocrit of 80% was 0.6% after 3 days of storage, 0.9% after 5 days of storage and 1.7% after 7 days of post thaw storage. The mean extracellular potassium level was 15.4 mEq/l for deglycerolized red blood cells stored at 4 C for 3 days, 15.6 mEq/l for deglycerolized red blood cells stored at 4 C for 5 days, and 19.8 mEq/l for deglycerolized red blood cells stored at 4 C for 7 days. After 7 days of post-wash storage, the red blood cell potassium level had decreased 25%, the red blood cell ATP level had decreased 30 to 35%, the red blood cell 2,3 DPG level had decreased by 60 to 70%, and red blood cell affinity for oxygen had increased by 5 torr.

The summary statistics of in vitro measurements on the 33 units studied during the 7 day postthaw period are reported in Table 3, with individual unit listings in Tables 4A through 4D.

The mean in vitro recovery was 96% after thawing, and 83% after thawing and washing. The mean supernatant hemoglobin level was 762 mg/dl for deglycerolized red blood cells stored at 4 C for 3 days, 1146 mg/dl for deglycerolized red blood cells stored at 4 C for 5 days, and 1325 mg/dl for deglycerolized red blood cells stored at 4 C for 7 days. The mean percent hemolysis for deglycerolized red blood cells concentrated to a hematocrit value of 80 V% increased from 0.3% on day 1, to 0.9 % on day 5, and reached 1% on day 7 after storage at 4 C. The extracellular potassium levels increased from a mean of 1.1 mEq/L on the day of washing to 12.6 mEq/L after 7 days of storage at 4 C. Intracellular potassium showed an approximate 15% loss during the 7 day storage period, and intracellular sodium showed a 19% increase during the 7 day storage period. The MCV value decreased slightly and the MCHC value increased slightly during postthaw storage, but the MCH values remained relatively constant throughout the 7 day storage period.

The effects of post-thaw centrifugation of the red blood cells are reported in Table 5. The paired t test indicated no significant differences in supernatant hemoglobin levels in the 14 units before and after centrifugation.

Table 6 reports summary data on 716 units of deglycerolized red blood cells processed in Productivity Studies 1 and 2. Results of individual units are reported in Table 7. All units of deglycerolized red blood cells were cultured after storage at 4 C for 14 days, and no positive cultures were observed. The mean supernatant osmolality was 339 mOsm/kg, and the mean cellular hemoglobin was 47.9 g with an in vitro recovery of 80%. The mean level of supernatant hemoglobin was 611 mg/dl after 7 days of post- thaw storage.

Of the 761 units in the two productivity studies, 16 bags were broken, with a breakage rate of 2.1%.

DISCUSSION

The FDA currently approves the storage of previously frozen red blood cells for storage at 4 C for only 24 hours following deglycerolization. Concerns raised about an extension of the postthaw storage period to 5 days include the possible reduction in 24 hour posttransfusion survival, effects of supernatant hemoglobin accumulated during the postthaw storage period, and the potential for increased bacterial contamination, i.e. use of functionally non-closed system to deglycerolize the red blood cells.

These studies demonstrate that the mean 24-hour-posttransfusion survival value of deglycerolized red blood cells was greater than 75% after 5 days of postthaw storage, and the mean percent hemolysis in the red cell concentrates after 5 days of postthaw storage was less than 1%.

In the two productivity studies, there was no bacteriologic contamination in the 716 units of previously frozen, deglycerolized red blood cells stored at 4 C in the sodium chloride-glucose solution for 14 days following washing.

CONCLUSIONS

Deglycerolized red blood cells stored for 5 days at 4 C in the 0.9% sodium chloride- 0.2% glucose solution had a mean 24-hour-posttransfusion survival value greater than 75%, with a mild to moderate increase in red cell affinity for oxygen. The mean percent hemolysis in the units concentrated following 5 days of storage at 4 C in sodium chloride-glucose solution was less than 1%.

No bacterial contamination was observed in the 716 units of deglycerolized red blood cells stored at 4 C for 14 days.

These data support the extension of the postthaw storage of previously frozen, deglycerolized red blood cells at 4 C from 24 hours to 5 days, as requested by the U.S. Navy. The potential for contamination of deglycerolized red blood cells stored at 4 C for 5 days is no greater than that expected for platelets stored at 22 C for 5 days, and the FDA has approved platelet storage at 22 C for 5 days.

The Naval Blood Research Laboratory's publications related to freezing, thawing, washing and post-thaw storage at 4 C of deglycerolized red blood cells are enclosed, together with publications related to the sterility of deglycerolized red blood cells stored at 4 C for periods beyond the current FDA approved 24-hour period.

REFERENCES CITED

Valeri CR, Pivacek LE, Ouellet R, Gray A. A comparison of methods of determining the 100% survival of preserved red cells. Transfusion 1984;24:105-108.

Keitt AS. Pyruvate kinase deficiency and related disorders of red cell glycolysis. Am J Med 1966;41:762-785.

Asakura T, Reilly MP. Methods for the measurement of oxygen equilibrium curves of red cell suspensions and hemoglobin solutions. Advances in the Biosciences, Vol. 54. In: Oxygen Transport in Red Blood Cells, C. Nicolau, ed., Pergamon Press, Elmsford, NY, 1986, pps 57-75.

NAVAL BLOOD RESEARCH LABORATORY REFERENCES

Valeri CR. Effect of resuspension medium on in vivo survival and supernatant hemoglobin of erythrocytes preserved with glycerol. Transfusion 1965;5:25-35.

Valeri CR. The in vivo survival, mode of removal of the non-viable cells, and the total amount of supernatant hemoglobin in deglycerolized, resuspended erythrocytes. I. The effect of the period of storage in ACD at 4 C prior to glycerolization. II. The effect of washing deglycerolized, resuspended erythrocytes after a period of storage at 4 C. Transfusion 1965;5:273-285.

Valeri CR. The in vivo survival and supernatant hemoglobin of autologous, deglycerolized, resuspended erythrocytes processed using centrifugation. III. The effect of the length of storage at -80 C. Transfusion 1966;6:112-115.

Moss GS, Valeri CR, Brodine CE. Clinical experience with the use of frozen blood in combat casualties. New Engl J Med 278:748-752, 1968.

Valeri CR, Runck AH. Long term frozen storage of human red blood cells: Studies in vivo and in vitro of autologous red blood cells preserved up to six years with high concentrations of glycerol. Transfusion 1969;9:5-14.

Daane TA, Valeri CR, Barton RK. Autotransfusions of previously frozen blood in elective gynecologic surgery. Am J Obst Gynec 1969;105:394-399.

Valeri CR, Runck AH, Brodine CE. Recent advances in freeze-preservation of red blood cells. JAMA 1969;208:489-492.

Daane TA, Valeri CR, Barton RK. Autologous transfusions of previously frozen blood in elective surgery. Lab Med 1970;1:34-35.

Valeri CR, Szymanski IO, Runck AH. Therapeutic effectiveness of homologous erythrocyte transfusions following frozen storage at -80 C for up to seven years. Transfusion 1970;10:102-112.

Valeri CR, Zaroulis CG. Rejuvenation and freezing of outdated stored human red cells. New Engl J Med 1972;287:1307-1313.

Runck AH, Valeri CR. Continuous-flow centrifugation washing of red blood cells. Transfusion 1972;12:237-244.

Howarth HC, Valeri CR. Autotransfusion of frozen red blood cells in elective oral surgery. J Oral Surg 1973;31:40-43.

Valeri CR. Factors influencing the 24-hour posttransfusion survival and the oxygen transport function of previously frozen red cells preserved with 40 per cent W/V glycerol and frozen at -80 C. Transfusion 1974;14:1-15.

Valeri CR. Simplification of the methods for adding and removing glycerol during freeze-preservation of human red blood cells with the high or low glycerol methods: Biochemical modification prior to freezing. Transfusion 1975;15:195-218.

Contreras TJ, Valeri CR. A comparison of methods to wash liquid-stored red blood cells and red blood cells frozen with high or low concentrations of glycerol. Transfusion 1976;16:539-565.

Contreras TJ, Valeri CR. Removal of HBsAg from blood in vitro. I. Effects of washing alone, glycerol addition and removal, and glycerolization, freezing, and washing. Transfusion 1976;16:594-609.

Kurtz SR, Van Deinse WH, Valeri CR. The immunocompetence of residual lymphocytes at various stages of red cell cryopreservation with 40% W/V glycerol in an ionic medium at -80 C. Transfusion 1978;18:441-447.

Valeri CR, Valeri DA, Dennis RC, Vecchione JJ, Emerson CP. Human red blood cells with normal or improved oxygen transport function prepared and frozen in the primary polyvinyl chloride plastic blood collection container. Blood Transfusion and Immunohaematology 1979;22:467-486.

Valeri CR, Valeri DA, Dennis RC, Vecchione JJ, Emerson CP. Biochemical modification and freeze-preservation of red blood cells. A new method. Crit Care Med 1979;7:439-447.

Valeri CR, Valeri DA, Anastasi J, Vecchione JJ, Dennis RC, Emerson CP. Freezing in the primary polyvinylchloride plastic collection bag: A new system for preparing and freezing nonrejuvenated and rejuvenated red blood cells. Transfusion 1981;21:138-149.

Kurtz SR, Valeri DA, Melaragno AJ, Gray A, Vecchione JJ, Emerson CP, Valeri CR. Leukocyte-poor red blood cells prepared by the addition and removal of glycerol from red blood cell concentrates stored at 4 C. Transfusion 1981;21:435-449.

Valeri CR, Valeri DA, Gray A, Melaragno AJ, Vecchione JJ, Dennis RC, Emerson CP. Cryopreserved red blood cells for pediatric transfusion. Frozen storage of small aliquots in polyvinyl chloride (PVC) plastic bags. Transfusion 1981;21:527-536.

Valeri CR. Status report on rejuvenation and freezing of red blood cells. Plasma Therapy 1981;2:155-170.

Valeri CR. New developments in red blood cell preservation using liquid and freezing procedures. J Clin Lab Automation 1982;2:425-439.

Kurtz SR, Valeri DA, Gray A, Lindberg JR, McMican A, Blumberg N, Valeri CR. A new approach to washing red blood cells frozen with a high concentration of glycerol in a special freezing container. Vox Sang 1982;43:132-137.

Valeri CR, Valeri DA, Gray A, Melaragno A, Dennis RC, Emerson CP. Red blood cell concentrates stored at 4 C for 35 days in CPDA-1, CPDA-2, or CPDA-3 anticoagulant-preservative, biochemically modified, and frozen and stored in the polyvinylchloride plastic primary collection bag with 40% W/V glycerol at -80 C. Transfusion 1982;22:102-106.

Valeri CR, Gray AD, Cassidy GP, Riordan W, Pivacek LE. The 24-hour posttransfusion survival, oxygen transport function, and residual hemolysis of human outdated-rejuvenated red cell concentrates after washing and storage at 4 C for 24 to 72 hours. Transfusion 1984;24:323-326.

Valeri CR. Frozen red blood cells. In: Principles of Transfusion Medicine, Williams & Wilkins, Baltimore, MD, 1988, Vol. 7, pps 57-62.

Valeri CR, Pivacek LE, Gray AD, Cassidy GP, Leavy ME, Dennis RC, Melaragno AJ, Niehoff J, Yeston N, Emerson CP, Altschule MD. The safety and therapeutic effectiveness of human red cells stored at -80 C for as long as 21 years. Transfusion 1989;29:429-437.

Valeri CR. Preservation of red blood cells and platelets: Freezing, storage, recovery, and quality. In: Blood Separation and Plasma Fractionation, Wiley-Liss, New York, NY, 1991, pps 127-153.

PUBLICATIONS RELATED TO STERILITY OF BLOOD PRODUCTS

Goldman M, Blajchman MA. Blood product-associated bacterial sepsis. Trans Med Rev 1991;5:73-83.

Hamill TR, Hamill SG, Busch MP. Effects of room-temperature exposure on bacterial growth in stored red cells. Transfusion 1990;30:302-306.

Hogman CF, Gong J, Eriksson L, Hambraeus A, Johansson CS. White cells protect donor blood against bacterial contamination. Transfusion 1991;31:620-626.

Hoppe PA. Interim measures for detection of bacterially contaminated red cell components. Transfusion 1992;32:199-201.

Jacobson MS, Kevy SV, Thorne GM, Goldmann DA, Blasetti L, Smith JW, Schaefer H. Microbial challenge of a blood cell separator outside-seal bowl system. Transfusion 1990;30:146-149.

Kahn RA, Meryman HT, Syring RL, Flinton LJ. The fate of bacteria in frozen red cells. Transfusion 1976;16:215-220.

Kane O, George E, Offner M, Eber M, Tromp C, Goll S. Nine days post-thawing red cell conservation in a synthetic medium. Biochemical studies. Transfusion 1986;26:437-440.

Moore GL, Ledford ME, Mathewson PJ, Hankins DJ. Liquid storage at 4 C of previously frozen red cells. Transfusion 1987;27:496-498.

Moore GL, Hess Jr, Ledford ME. In vivo viability studies of two additive solutions in the postthaw preservation of red cells held for 3 weeks at 4 C. Transfusion 1993;33:709-712.

Myhre BA, Nakasako YY, Schott R. A rapid method for determining the sterility of frozen-reconstituted blood. Transfusion 1977;17:195-202.

Myhre BA, Marcus CS. The extension of 4 C storage time of frozen-thawed red cells. Transfusion 1992;32:344-348.

Radcliffe JH, Denham MA, Gaydos C, Simpson Jr MB. Bacteriological sterility of washed deglycerolized red blood cells after 72 hours storage. Transfusion 1978;18:365-366.

Ross DG, Heaton WAL, Holme S. Additive solution for the suspension and storage of deglycerolized red blood cells. Vox Sang 1989;56:75-79.

Yomtovian R, Lazarus HM, Goodnough LT, Hirschler NV, Morrissey AM, Jacobs MR. A prospective microbiologic surveillance program to detect and prevent the transfusion of bacterially contaminated platelets. Transfusion 1993;33:902-909.

TABLE 1

MEAN, STANDARD DEVIATION AND MINIMUM AND MAXIMUM VALUES OF MEASUREMENTS ON IN VIVO UNITS OF AUTOLOGOUS RED BLOOD CELLS STORED FOR AS LONG AS 7 DAYS AND TRANSFUSED AS AUTOLOGOUS SMALL ALIQUOTS

	FREEZE–THAW–WASH RECOVERY (%)	24 HOUR POST–TX SURVIVAL (51CR, %)	INDEX OF THERAPEUTIC EFFECTIVENESS (%)	SUPERNATANT HEMOGLOBIN (mg/dl)	HEMOLYSIS AT 80% HCT (%)	EXTRACELL POTASSIUM (mEq/L)	RED CELL POTASSIUM (mEq/ 10E12RBC)	RED CELL 2,3 DPG (uM/g hb)	RED CELL ATP (uM/g hb)	RED CELL p50 (mm Hg)
NORMAL RANGE:							6.5–8.5	10.6–13.9	3.5–7.5	26.6–31.4
3 TO 4 DAYS POST WASH										
MEAN	85.2	83	71	794	0.6	15.4	6.3	5.7	4.5	22.2
SD	6.6	5	9	260	0.2	1.3	0.6	2.4	0.5	2.5
N	5	5	5	5	5	4	4	5	5	5
MIN	79.5	75	61	482	0.4	13.8	5.9	3.6	3.8	19.5
MAX	94.1	87	81	1066	0.8	16.7	7	9.5	4.9	26.0
5 DAYS POST WASH										
MEAN	90.1	86	77	1152	0.9	15.6	6.3	6.0	3.9	20.9
SD	5.5	5	5	610	0.5	5	0.7	3.2	0.9	3.8
N	11	11	11	11	11	11	11	11.0	11.0	8.0
MIN	78.9	73	67	471	0.4	8.7	5.6	1.0	2.9	14.0
MAX	95.4	92	83	2739	2.4	23.6	7.7	12.2	5.8	24.5
7 TO 8 DAYS POST WASH										
MEAN	91.6	77	71	2114	1.7	19.8	5.5	4.2	3.4	22.4
SD	3	6	6	1021	0.9	2.6	0.9	2.8	1.1	2.7
N	12	12	12	12	12	12	12	11	10	11
MIN	86.2	67	59	894	0.7	16.0	4.4	1.1	1.1	18.8
MAX	95.0	86	82	4711	4.1	24.5	7.2	10.4	4.7	27.9

TABLE 2A.

LISTING OF IN VIVO UNITS OF AUTOLOGOUS RED BLOOD CELLS

UNIT NO.	DAYS PRE FZ	DAYS FZN	DAYS POST WASH	CPD OR CPDA-1	24HR SURVI-VAL (%)	INDEX OF THER. EFFECT.	SUPERNATANT OSMOLALITY (mOsm/kg)	VOL POST (ml)	HCT (%) DAY WASH	HCT (%) DAY TX'D	HB (g) TOTAL	RECOVERY (%) THAW	RECOVERY (%) WASH
RED CELLS STORED FOR 3 TO 4 DAYS POST WASH													
9101143	4	21	3	CPDA-1	81	64	319	415	38.0		51.1	98.2	79.5
9002462	3	35	3	CPDA-1	86	81	339	410	41.0		54.1	99.3	94.1
9002468	3	35	3	CPDA-1	87	79	329	405	42.0		53.9	98.7	90.4
9002465	3	35	3	CPDA-1	75	61	335	397	44.0		53.6	96.1	81.9
9002464	3	35	4	CPDA-1	86	69	323	423	38.0		52.0	98.8	80.0
MEAN	3	32	3		83	71	329	410	40.6		52.9	98.2	85.2
SD	0	6	0		5	9	8	10	2.6		1.3	1.2	6.6
N	5	5	5		5	5	5	5	5.0		5.0	5.0	5.0
MIN	3	21	3		75	61	319	397	38.0		51.1	96.1	79.5
MAX	4	35	4		87	81	339	423	44.0		54.1	99.3	94.1
RED CELLS STORED FOR 5 DAYS POST WASH													
9101201	3	32	5	CPDA-1	87	82	359	412	45.0		61.3	99.3	94.0
9100015	6	24	5	CPDA-1	83	76	338	408	44.0		59.2	97.8	92.1
9101202	3	31	5	CPDA-1	85	80	336	413	42.0		49.5	99.6	94.7
9300232	6	169	5	CPDA-1	87	81	321	425	41.0	84.0	56.6	98.0	92.8
9300348	5	123	5	CPDA-1	92	80	314	421	40.0	85.0	56.4	99.4	87.1
9300205	5	192	5	CPDA-1	84	75	321	434	38.0	83.5	56.9	99.3	89.4
9300333	6	136	5	CPDA-1	89	70	314	413	33.0	87.0	42.9	99.5	78.9
9300337	6	136	5	CPDA-1	87	71	316	436	32.0	84.0	46.8	99.3	81.3
9300463	5	17	5	CPDA-1	87	81	322	424	40.0	86.0	59.4	98.7	93.3
9300247	5	213	5	CPDA-1	73	67	333	423	46.0	82.5	55.4	98.8	92.2
9300334	6	185	5	CPDA-1	87	83	340	423	43.5	91.0	53.7	99.4	95.4
MEAN	5	114	5		86	77	329	421	40.4	85.4	54.4	99.0	90.1
SD	1	75	0		5	5	14	9	4.6	2.7	5.7	0.6	5.5
N	11	11	11		11	11	11	11	11.0	8.0	11.0	11.0	11.0
MIN	3	17	5		73	67	314	408	32.0	82.5	42.9	97.8	78.9
MAX	6	213	5		92	83	359	436	46.0	91.0	61.3	99.6	95.4
RED CELLS STORED FOR 7 TO 8 DAYS POST WASH													
9100450	3	28	7	CPDA-1	80	70	333	448	40.0		62.8	98.3	88.0
9100451	3	28	7	CPDA-1	71	66	323	451	42.0		63.6	98.9	92.3
9100448	3	31	7	CPDA-1	81	76	339	422	47.0		65.6	99.4	94.2
9100430	3	34	7	CPDA-1	79	73	337	422	41.0		61.0	98.8	93.0
9101155	3	36	7	CPDA-1	80	75	334	413	47.0		59.0	98.9	93.9
D911349	5	486	7	CPDA-1	86	82	329	419	41.9		52.3	99.1	95.0
NBRW12	5	479	7	CPDA-1	80	74	323	421	40.0		51.4	99.3	92.8
D911275	6	526	8	CPDA-1	71	65	318	418	45.0		60.1	98.9	91.7
9300137	5	28	7	CPDA-1	81	73	324	420	41.0		50.0	99.1	90.2
9300138	5	28	7	CPDA-1	78	67	325	423	37.0		46.6	99.0	86.2
9300145	6	29	7	CPDA-1	67	59	317	423	36.0		49.5	98.2	87.5
9300174	4	28	7	CPDA-1	72	68	327	429	38.0		51.9	99.4	94.5
MEAN	4	147	7		77	71	327	426	41.3		56.2	98.9	91.6
SD	1	212	0		6	6	7	12	3.6		6.5	0.4	3.0
N	12	12	12		12	12	12	12	12.0		12.0	12.0	12.0
MIN	3	28	7		67	59	317	413	36.0		46.6	98.2	86.2
MAX	6	526	8		86	82	339	451	47.0		65.6	99.4	95.0

TABLE 2B.

LISTING OF IN VIVO UNITS OF AUTOLOGOUS RED BLOOD CELLS

UNIT NO.	SUP HB (mg/dl) THAW	WASH	DAYS POST WASH 3–4	5	7–8	HEMOLYSIS AT 80% HCT (%) DAYS POST WASH 3–4	5	7–8
9101143	758	146	572			0.4		
9002462	365	114	482			0.4		
9002468	627	127	1066			0.8		
9002465	1871	165	1014			0.8		
9002464	498	127	897			0.6		
MEAN	824	136	794			0.6		
SD	603	20	260			0.2		
N	5	5	5			5.0		
MIN	365	114	482			0.4		
MAX	1871	165	1066			0.8		
9101201	306	135		1390			1.1	
9100015	918	67		986			0.7	
9101202	152	67		1031			0.9	
9300232	854	75		1434			1.1	
9300348	195	21		471			0.4	
9300205	280	86		1242			0.9	
9300333	269	64		920			0.7	
9300337	270	86		514			0.4	
9300463	674	118		1091			0.8	
9300247	445	75		2739			2.4	
9300334	197	107		856			0.7	
MEAN	415	82		1152			0.9	
SD	274	31		610			0.5	
N	11	11		11			11.0	
MIN	152	21		471			0.4	
MAX	918	135		2739			2.4	
9100450	827	121			2821			2.0
9100451	476	77			2402			1.8
9100448	254	110			1410			1.1
9100430	515	99			1146			0.8
9101155	615	78			1860			1.5
D911349	347	74			1295			1.1
NBRW12	456	76			2081			1.7
D911275	522	98			1821			1.4
9300137	504	65			4711			4.1
9300138	484	87			2748			2.3
9300145	878	131			2181			1.7
9300174	208	76			894			0.7
MEAN	507	91			2114			1.7
SD	199	21			1021			0.9
N	12	12			12			12.0
MIN	208	65			894			0.7
MAX	878	131			4711			4.1

TABLE 2C.

LISTING OF IN VIVO UNITS OF AUTOLOGOUS RED BLOOD CELLS

UNIT NO.	EXTRA K+ (mEq/L) WASH	EXTRA K+ (mEq/L) DAYS POST WASH 3–4	EXTRA K+ (mEq/L) DAYS POST WASH 5	EXTRA K+ (mEq/L) DAYS POST WASH 7–8	RED CELL K+ (mEq/10E12RBC) WASH	RED CELL K+ (mEq/10E12RBC) DAYS POST WASH 3–4	RED CELL K+ (mEq/10E12RBC) DAYS POST WASH 5	RED CELL K+ (mEq/10E12RBC) DAYS POST WASH 7–8	RED CELL NA+ (mEq/10E12RBC) WASH	RED CELL NA+ (mEq/10E12RBC) DAYS POST WASH 3–4	RED CELL NA+ (mEq/10E12RBC) DAYS POST WASH 5	RED CELL NA+ (mEq/10E12RBC) DAYS POST WASH 7–8
9101143	0.8				6.5				1.5			
9002462	1.4	16.7			6.7	7.0			1.7	2.5		
9002468	1.7	16.2			6.0	5.9			1.9	2.7		
9002465	1.7	14.9			6.6	5.9			1.8	2.8		
9002464	1.3	13.8			5.9	6.0			1.7	2.1		
MEAN	1.4	15.4			6.3	6.2			1.7	2.5		
SD	0.4	1.3			0.4	0.6			0.2	0.3		
N	5.0	4.0			5.0	4.0			5.0	4.0		
MIN	0.8	13.8			5.9	5.9			1.5	2.1		
MAX	1.7	16.7			6.7	7.0			1.9	2.8		
9101201			19.4				6.8				2.6	
9100015			13.9				6.5				2.5	
9101202			20.2				7.7				3.9	
9300232	2.0		15.9		6.1		5.6		3.5		3.5	
9300348	1.1		8.7		5.4		5.7		2.3		2.9	
9300205	1.1		12.5		5.9		5.7		1.8		3.1	
9300333	0.7		12.9		7.5		6.1		2.2		3.8	
9300337	0.9		9.3		6.2		6.1		2.2		2.9	
9300463	0.5		13.5		6.2		6.4		1.9		2.7	
9300247	1.8		21.7		6.2		5.9		2.5		2.6	
9300334	1.2		23.6		7.4		7.1		2.0		3.0	
MEAN	1.2		15.6		6.4		6.3		2.3		3.0	
SD	0.5		5.0		0.7		0.7		0.5		0.5	
N	8.0		11.0		8.0		11.0		8.0		11.0	
MIN	0.5		8.7		5.4		5.6		1.8		2.5	
MAX	2.0		23.6		7.5		7.7		3.5		3.9	
9100450	1.4			21.1	6.8			5.6	1.5			2.6
9100451	1.3			23.0	6.9			6.0	1.3			2.4
9100448	0.9			21.6	9.1			4.9	1.4			1.7
9100430	0.9			21.5	8.4			5.1	1.2			1.7
9101155	0.9			20.5	6.7			5.2	1.8			2.3
D911349	0.7			17.7	7.7			6.7	1.6			2.6
NBRW12	1.9			19.4	7.3			7.2	2.5			4.0
D911275	1.2			19.0	6.7			6.6	2.0			3.6
9300137	3.9			24.5	8.9			4.7	2.8			3.7
9300138	1.9			17.1	6.4			4.4	2.3			3.2
9300145	1.8			16.0	5.7			4.5	1.8			2.5
9300174	1.0			16.9	6.6			5.6	1.5			2.3
MEAN	1.5			19.8	7.3			5.5	1.8			2.7
SD	0.9			2.6	1.0			0.9	0.5			0.8
N	12.0			12.0	12.0			12.0	12.0			12.0
MIN	0.7			16.0	5.7			4.4	1.2			1.7
MAX	3.9			24.5	9.1			7.2	2.8			4.0

TABLE 2D.

LISTING OF IN VIVO UNITS OF AUTOLOGOUS RED BLOOD CELLS

UNIT NO.	MCV (fL) WASH	MCV (fL) DAYS POST WASH 3–4	MCV (fL) DAYS POST WASH 5	MCV (fL) DAYS POST WASH 7–8	MCH (pg) WASH	MCH (pg) DAYS POST WASH 3–4	MCH (pg) DAYS POST WASH 5	MCH (pg) DAYS POST WASH 7–8	MCHC (g/dL) WASH	MCHC (g/dL) DAYS POST WASH 3–4	MCHC (g/dL) DAYS POST WASH 5	MCHC (g/dL) DAYS POST WASH 7–8
9101143	95.7	97.6			31.1	30.7			32.5	31.5		
9002462	98.1	104.5			31.6	33.8			32.2	32.3		
9002468	101.2	91.6			32.5	31.5			31.7	34.4		
9002465	108.8	102.3			33.8	35.1			31.0	34.3		
9002464	99.3	93.8			32.1	32.4			32.4	34.5		
MEAN	100.6	97.9			32.2	32.7			32.0	33.4		
SD	5.0	5.5			1.0	1.8			0.6	1.4		
N	5.0	5.0			5.0	5.0			5.0	5.0		
MIN	95.7	91.6			31.1	30.7			31.0	31.5		
MAX	108.8	104.5			33.8	35.1			32.5	34.5		
9101201	93.5		96.6		31.4		31.4		33.6		32.5	
9100015	93.0		94.6		30.7		30.1		33.0		31.8	
9101202	102.7		100.4		29.3		28.6		28.6		28.5	
9300232	93.4		103.7		30.1		32.4		32.2		31.2	
9300348	88.9		97.3		28.9		30.3		32.5		31.2	
9300205	89.5		103.9		31.0		32.6		34.7		31.4	
9300333	102.9		111.8		32.9		33.3		32.0		29.8	
9300337	90.9		101.2		30.4		30.3		33.4		29.9	
9300463	89.1		97.1		31.2		31.6		35.0		32.6	
9300247	89.2		90.5		25.4		23.7		28.5		26.2	
9300334	103.6		109.1		30.2		29.5		29.2		27.0	
MEAN	94.2		100.6		30.1		30.3		32.1		30.2	
SD	5.9		6.3		1.9		2.6		2.3		2.2	
N	11.0		11.0		11.0		11.0		11.0		11.0	
MIN	88.9		90.5		25.4		23.7		28.5		26.2	
MAX	103.6		111.8		32.9		33.3		35.0		32.6	
9100450	93.9			97.7	32.9			34.3	35.0			35.1
9100451	91.9			98.6	30.9			33.2	33.6			33.7
9100448	108.3			80.8	35.8			25.8	33.0			31.9
9100430	97.0			81.4	34.4			28.4	35.5			34.8
9101155	92.7			91.3	28.5			28.6	30.8			31.3
D911349	88.5			95.2	26.4			27.8	29.9			29.3
NBRW12	102.2			115.7	31.5			30.1	30.8			26.0
D911275	103.0			111.8	31.3			31.4	30.4			28.1
9300137	121.7			101.5	35.3			35.7	29.0			35.1
9300138	94.4			88.8	28.1			30.2	29.7			34.0
9300145	90.9			82.3	29.6			29.1	32.5			35.3
9300174	89.8			90.7	28.6			30.2	31.8			33.3
MEAN	97.9			94.6	31.1			30.4	31.8			32.3
SD	9.6			11.2	3.0			2.8	2.1			3.1
N	12.0			12.0	12.0			12.0	12.0			12.0
MIN	88.5			80.8	26.4			25.8	29.0			26.0
MAX	121.7			115.7	35.8			35.7	35.5			35.3

TABLE 2E.

LISTING OF IN VIVO UNITS OF AUTOLOGOUS RED BLOOD CELLS

UNIT NO.	RED CELL 2,3 DPG (mM/gHb)				RED CELL ATP (mM/gHb)				RED CELL p50 (mmHG)			
	WASH	DAYS POST WASH			WASH	DAYS POST WASH			WASH	DAYS POST WASH		
		3-4	5	7-8		3-4	5	7-8		3-4	5	7-8
9101143	14.4	9.5			6.0	4.9			31.3	26.0		
9002462	8.9	6.3			4.7	4.2			24.7	21.8		
9002468	8.8	5.1			4.9	3.8			31.0	23.1		
9002465	7.7	4.0			4.6	4.8			30.7	20.8		
9002464	6.6	3.6			5.5	4.9			28.9	19.5		
MEAN	9.3	5.7			5.1	4.5			29.3	22.2		
SD	3.0	2.4			0.6	0.5			2.7	2.5		
N	5.0	5.0			5.0	5.0			5.0	5.0		
MIN	6.6	3.6			4.6	3.8			24.7	19.5		
MAX	14.4	9.5			6.0	4.9			31.3	26.0		
9101201	12.9		7.1		5.1		4.9		30.1		24.0	
9100015			4.3				5.8		31.7		22.0	
9101202	10.4		4.1		5.1		3.6				23.0	
9300232			5.8				3.0		24.7		20.2	
9300348			12.2				4.5		30.1		24.5	
9300205			6.7				2.9		29.3		16.6	
9300333			3.0				4.2		27.4		23.0	
9300337			1.0				3.3		24.3		14.0	
9300463			8.3				3.3					
9300247			9.8				3.7					
9300334			3.8				3.5					
MEAN	11.7		6.0		5.1		3.9		28.2		20.9	
SD	1.8		3.2		0.0		0.9		2.9		3.8	
N	2.0		11.0		2.0		11.0		7.0		8.0	
MIN	10.4		1.0		5.1		2.9		24.3		14.0	
MAX	12.9		12.2		5.1		5.8		31.7		24.5	
9100450	12.0			3.9	3.9			3.7	33.0			21.0
9100451	10.9			4.1	4.1			3.8	27.2			22.0
9100448	11.3			6.9	6.9			4.1	28.0			27.9
9100430	13.9			5.6	5.6			4.3	27.8			
9101155	15.7			5.3	5.3			4.7	31.7			24.7
D911349												23.3
NBRW12				10.4				3.7				25.4
D911275				1.1				2.9				20.5
9300137				3.6					27.2			19.6
9300138				2.0				2.0	25.8			20.5
9300145				1.2				1.1	23.8			18.8
9300174				2.2				3.6	20.9			22.4
MEAN	12.8			4.2	5.2			3.4	27.3			22.4
SD	2.0			2.8	1.2			1.1	3.7			2.7
N	5.0			11.0	5.0			10.0	9.0			11.0
MIN	10.9			1.1	3.9			1.1	20.9			18.8
MAX	15.7			10.4	6.9			4.7	33.0			27.9

TABLE 3.

MEAN, STANDARD DEVIATION, MINIMUM AND MAXIMUM VALUES OF IN VITRO MEASUREMENTS ON UNITS OF RED BLOOD CELLS TESTED DURING POST THAW STORAGE FOR AS LONG AS 7 DAYS

	FREEZE–THAW RECOVERY (%)	FREEZE–THAW–WASH RECOVERY (%)	SUPERNATANT OSMOLALITY (mOsm/kg)	VOLUME (ml)	HEMATO–CRIT (%)	HEMO–GLOBIN (g)
MEAN	95.7	82.9	325	417	37	48.8
SD	3.5	7.4	18	11	4	6.1
N	33	33	33	33	33	33
MIN	85.6	60.5	293	390	26	32.9
MAX	99.2	92.6	389	452	44	57.8

SUPERNATANT HEMOGLOBIN (mg/dl)

	THAW	WASH	DAYS POST WASH 1	3	4	5	7
MEAN	1277	114	332	762	1227	1146	1325
SD	1151	29	259	716	235	1004	931
N	33	33	25	26	3	12	24
MIN	352	53	128	131	1016	203	353
MAX	5081	211	1352	2996	1481	3510	4449

HEMOLYSIS AT 80% HCT (%)

	DAYS POST WASH 1	3	4	5	7
MEAN	0.3	0.6	1.0	0.9	1.0
SD	0.2	0.6	0.2	0.8	0.7
N	25	26	3	12	23
MIN	0.1	0.1	0.8	0.2	0.3
MAX	1.0	2.5	1.2	3.0	3.6

EXTRACELLULAR K+ (mEq/L)

	WASH	DAYS POST WASH 1	3	4	5	7
MEAN	1.1	5.5	8.9	15.0	11.9	12.6
SD	0.9	2.7	4.8	2.7	4.6	4.8
N	33	24	26	3	12	23
MIN	0.3	1.8	1.6	12.3	6.8	5.6
MAX	3.9	10.4	19.7	17.7	21	21.4

RED CELL K+ (mEq/10E12RBC)

	WASH	DAYS POST WASH 1	3	4	5	7
MEAN	6.5	6.2	6.0	6.3	5.1	5.6
SD	0.6	0.7	0.6	0.6	0.5	1.7
N	29	24	25	3	6	24
MIN	4.9	4.9	4.7	5.8	4.4	2.2
MAX	7.5	7.8	7.1	6.9	5.8	11.3

RED CELL NA+ (mEq/10E12RBC)

	WASH	DAYS POST WASH 1	3	4	5	7
MEAN	2.1	2.2	2.4	2.2	2.5	2.5
SD	0.3	0.4	0.3	0.1	0.4	0.5
N	28	24	25	3	6	24
MIN	1.5	1.5	1.8	2.1	2	1.5
MAX	2.8	2.9	2.9	2.3	3.1	3.7

MCV (fL)

	WASH	DAYS POST WASH 1	3	4	5	7
MEAN	94.9	93.4	93.2	93.4	89.6	89.5
SD	5.2	5.5	4.7	7.1	5.2	7.0
N	31	24	25	2	6	22
MIN	85.0	80.0	82.9	88.4	84.1	72.2
MAX	104.9	102.9	100.0	98.4	97.2	99.5

MCH (pg)

	WASH	DAYS POST WASH 1	3	4	5	7
MEAN	30.3	30.3	31.2	30.8	29.7	30.9
SD	1.9	1.5	1.8	1.3	1.2	2.4
N	30	23	24	2	6	23
MIN	26.7	26.5	27	29.8	27.9	23.7
MAX	36.1	33.5	33.9	31.7	31.3	34.4

MCHC (g/dL)

	WASH	DAYS POST WASH 1	3	4	5	7
MEAN	32	32.4	33.6	33.1	33.2	34.4
SD	1.4	2.2	1.4	1.1	1.6	2.2
N	31	24	26	2	6	23
MIN	29.1	27	30.7	32.3	31.3	29.3
MAX	35	39.4	36.4	33.8	35.5	39.7

TABLE 4A.

LISTING OF IN VITRO RED BLOOD CELL UNITS TESTED DURING POST THAW STORAGE FOR 7 DAYS

UNIT ID	DAYS PRE FZ	DAYS FZN	CPD OR CPDA-1	SUPERNATANT OSMOLALITY (mOsm/kg)	VOL. (ml)	HCT (%) THAW	HCT (%) WASH	TOTAL HB (g) TOTAL POST	TOTAL HB (g) CELL POST	RECOVERY (%) THAW	RECOVERY (%) WASH
8800592	4	1957	CPD	336	411	57	35	46.8	46.6	97.0	85.9
8800568	3	1958	CPD	347	415	55	43	54.7	54.4	93.7	83.3
8702476	3	2077	CPD	304	418	49	33	43.1	42.8	85.6	68.3
8701773	3	2203	CPD	319	417	51	33	44.2	43.9	94.8	73.2
8603736	3	2460	CPD	314	396	58	33	38.4	38.1	89.2	76.3
8603716	4	2467	CPD	343	399	62	37	45.5	45.2	95.1	79.8
8603532	4	2498	CPD	317	413	55	37	48.3	48.0	93.2	86.6
8603464	4	2530	CPD	316	452	57	33	47.0	46.8	94.1	88.3
8603722	4	2475	CPD	321	411	58	34	41.1	40.8	93.2	84.6
8603858	6	2408	CPD	313	416	61	39	46.5	46.3	94.8	87.4
8603701	3	2608	CPD	322	420	54	41	55.0	54.8	93.1	86.1
8603702	3	2608	CPD	309	424	58	34	46.2	45.9	98.4	83.2
8603733	3	2601	CPD	315	422	57	38	51.5	51.2	97.2	89.4
8603810	5	2568	CPD	318	422	58	37	53.1	52.8	91.7	82.3
8603817	4	2565	CPD	329	420	55	41	57.5	57.3	94.3	83.7
8603833	5	2563	CPD	327	419	57	36	52.8	52.5	98.0	90.3
8603717	4	2618	CPD	322	421	52	31	40.4	40.0	88.7	69.3
8603373	6	2705	CPD	326	422	56	38	53.2	52.8	94.1	85.0
8303814	5	2579	CPD	326	428	58	38	52.2	51.9	94.3	85.3
8603649	5	2622	CPD	343	422	51	39	53.1	52.9	98.4	85.2
8603703	3	2618	CPD	338	420	58	44	56.7	56.3	95.7	87.4
8603639	5	2622	CPD	357	419	57	44	54.8	54.6	97.3	87.9
93-00106	3	133	CPDA-1	389	416	66	34	44.9	44.5	98.9	84.4
93-00102	3	131	CPDA-1	294	402	65	26	32.9	32.8	98.6	60.5
93-00156	3	96	CPDA-1	293	414	57	34	43.9	43.7	99.2	75.6
93-00107	3	132	CPDA-1	327	421	58	40	54.3	54.0	99.1	90.4
93-00154	3	97	CPDA-1	333	390	54	39	50.3	49.8	99.1	91.8
93-00099	3	131	CPDA-1	324	407	60	43	57.8	57.5	98.8	92.6
93-00149	3	96	CPDA-1	312	418	58	38	55.6	55.3	98.3	90.2
93-00095	3	133	CPDA-1	324	416	60	41	54.5	54.1	99.0	85.3
93-00148	3	98	CPDA-1	315	423	63	32	44.4	43.9	98.8	74.2
93-00111	3	131	CPDA-1	319	421	62	32	43.7	43.8	98.9	76.7
93-00162	3	97	CPDA-1	320	418	60	35	46.4	46.1	98.9	85.1
MEAN	4	1684		325	417	57	37	48.8	48.5	95.7	82.9
SD	1	1140		18	11	4	4	6.1	6.1	3.5	7.4
N	33	33		33	33	33	33	33	33	33	33
MIN	3	96		293	390	49	26	32.9	32.8	85.6	60.5
MAX	6	2705		389	452	66	44	57.8	57.5	99.2	92.6

TABLE 4B.

LISTING OF IN VITRO RED BLOOD CELL UNITS TESTED DURING POST THAW STORAGE FOR 7 DAYS

UNIT NO.	SUP HB (mg/dl)							HEMOLYSIS AT 40% HCT (%)					HEMOLYSIS AT 80% HCT (%)				
	THAW	WASH	DAYS POST WASH					DAYS POST WASH					DAYS POST WASH				
			1	3	4	5	7	1	3	4	5	7	1	3	4	5	7
8800592	371	76	1352	1112			2268	7.7	6.3			12.9	1.0	0.9			1.7
8800568	752	109	720	2530			4449	3.1	11.0			19.4	0.6	2.0			3.6
8702476	1810	87		164			458		1.1			3.0		0.1			0.4
8701773	600	109		131			1974		0.8			8.7		0.1			1.1
8603736	1396	131	196	294			502	1.4	2.0			3.5	0.2	0.3			0.4
8603716	698	131	643	1527			1876	3.6	8.4			10.4	0.5	1.2			1.5
8603532	916	98	229	371			774	1.2	2.0			4.2	0.2	0.3			0.6
8603464	807	87	153	262			676	1.0	1.7			4.4	0.1	0.2			0.5
8603722	861	109	294	654			1909	2.0	4.4			8.7	0.2	0.5			1.1
8603858	731	76	218	327			600	1.2	1.8			3.3	0.2	0.3			0.5
8603701	2899	96	128	268		353	407	0.6	1.2		1.6	1.8	0.1	0.2		0.3	0.3
8603702	723	107	128	225		203	353	0.8	1.4		1.2	2.1	0.1	0.2		0.2	0.3
8603733	1245	118	278	781		1220	1691	1.4	4.0		6.3	8.7	0.2	0.6		0.9	1.3
8603810	4341	107	503	1755		2536	3016	2.5	8.8		12.7	15.1	0.4	1.3		1.9	2.2
8603817	2413	107	257	599		899	1134	1.1	2.6		3.9	4.9	0.2	0.4		0.7	0.8
8603833	1172	118	193	289		375	460	1.0	1.5		1.9	2.3	0.1	0.2		0.3	0.3
8603717	5081	128		396		546			2.8		3.9			0.3		0.4	
8603373	2661	139		332		557			1.6		2.7			0.3		0.4	
8303814	2802	107		1113		1798			5.7		9.2			0.9		1.4	
8603649	521	107		449		642			2.2		3.1			0.3		0.5	
8603703	2025	150		696		1113			2.9		4.7			0.6		0.9	
8603639	1139	96		2996		3510			12.8		15.0			2.5		3.0	
93-00106	626	138	286		1016			1.7		6.2			0.2		0.8		
93-00102	808	53	190	508			1164	1.7	4.6			10.5	0.2	0.4			0.9
93-00156	352	74	190	688			1122	1.2	4.3			7.0	0.2	0.6			0.9
93-00107	390	138	296				1481	1.4					0.2				
93-00154	403	211	402				1883	1.9				8.9	0.3				1.4
93-00099	630	95	265	730			1566	1.1	2.9			6.3	0.2	0.6			1.2
93-00149	787	116	265	624			1227	1.2	2.9			5.7	0.2	0.4			0.9
93-00095	481	148	201		1481			0.9		6.7			0.2		1.2		
93-00148	666	148	434		1185			2.8		7.7			0.3		0.9		
93-00111	538	95	254				1185	1.7				7.8	0.2				0.9
93-00162	481	138	233				815	1.4				4.8	0.2				0.6
MEAN	1277	114	332	762	1227	1146	1325	1.8	3.9	6.9	5.5	7.1	0.3	0.6	1.0	0.9	1.0
SD	1151	29	259	716	235	1004	931	1.4	3.2	0.7	4.5	4.4	0.2	0.6	0.2	0.8	0.7
N	33	33	25	26	3	12	24	25	26	3	12	23	25	26	3	12	23
MIN	352	53	128	131	1016	203	353	0.6	0.8	6.2	1.2	1.8	0.1	0.1	0.8	0.2	0.3
MAX	5081	211	1352	2996	1481	3510	4449	7.7	12.8	7.7	15.0	19.4	1.0	2.5	1.2	3.0	3.6

TABLE 4C.

LISTING OF IN VITRO RED BLOOD CELL UNITS TESTED DURING POST THAW STORAGE FOR 7 DAYS

UNIT NO.	EXTRACELLULAR K+ (mEq/L)						RED CELL K+ (mEq/10E12RBC)						RED CELL Na+ (mEq/10E12RBC)					
	WASH	DAYS POST WASH					WASH	DAYS POST WASH					WASH	DAYS POST WASH				
		1	3	4	5	7		1	3	4	5	7		1	3	4	5	7
8800592	1.5	8.4	14.4			19.7	6.8	6.2	6.9			5.1	2.3	2.1	2.9			2.2
8800568	1.9	10.4	18.0			21.4	6.8	6.1				4.2	2.3	2.7				2.2
8702476	0.6		1.6			5.7	7.5		7.1			5.8	2.3		2.8			2.4
8701773	0.5		2.5			7.2	6.0		6.7			6.1	2.1		2.0			2.2
8603736	0.5	1.8	9.4			5.6	6.1	5.9	6.1			5.3	2.5	2.3	2.6			2.6
8603716	1.9	7.7	12.2			13.9	6.5	5.8	6.0			5.1	2.2	2.1	2.8			2.5
8603532	0.6	2.6	5.5			9.7	6.8	6.3	5.1			7.5	1.9	2.2	1.8			3.3
8603464	0.7	3.1	6.0			10.5	7.0	7.1	6.3			7.8	2.2	2.2	2.1			3.7
8603722	0.6	3.8	7.0			10.2	7.0	6.3	5.9			3.9	2.0	2.2	2.4			1.8
8603858	0.5	2.2	5.1			8.5	6.7	5.0	5.9			4.9	2.6	2.7	2.8			2.6
8603701	0.3	1.9	4.6		7.0	8.1	6.4	6.3	6.6			5.7	1.5	1.5	1.8			2.0
8603702	0.4	2.0	4.3		6.8	7.9	7.3	7.2	6.8			5.8	1.5	1.9	2.2			2.2
8603733	1.3	6.8	11.2		14.8		5.9	5.9	5.6			4.5	2.0	2.3	2.6			2.5
8603810	1.4	8.0	12.5		14.6	15.9	5.5	4.9	5.0			4.3	2.8	2.9	2.9			3.0
8603817	0.5	3.5	7.6		12.0	12.0	6.8	6.2	6.3			6.0	2.0	2.0	2.3			2.5
8603833	0.5	2.3	5.0		7.5	8.6	6.2	7.0	6.4			5.4	1.5	1.7	2.1			2.1
8603717	0.6		4.9		6.8		7.5		6.0		4.7		2.4		2.2		2.0	
8603373	0.9		7.5		9.6		6.1		6.0		5.3		2.4		2.2		2.3	
8303814	2.0		12.2		14.4		5.9		5.1		4.4		2.4		2.4		2.1	
8603649	1.2		8.4		11.1		5.7		5.5		5.4		2.1		2.4		2.8	
8603703	1.5		13.5		16.7		6.7		5.9		5.8		2.0		2.5		2.7	
8603639	3.9		19.7		21.0		6.6		5.1		4.9		2.4		2.9		3.1	
93-00106	2.6	8.1		15.0				7.8		6.9				1.9		2.2		
93-00102	0.6	4.7	8.2			11.3	7.0	6.0	6.2			11.3	2.0	2.4	2.5			2.7
93-00156	0.3	5.1	10.4			14.1	7.5	6.4	6.4			5.4	1.8	2.4	2.4			2.9
93-00107	1.1	7.0				17.7	6.9	6.7				6.4	1.5	1.7				1.5
93-00154	1.1	7.3				20.5	5.9	6.7				5.6		2.1				2.2
93-00099	0.8	8.0	14.4			19.3	4.9	5.9	4.7			4.9	2.2	2.6	2.4			2.4
93-00149	0.5	5.8	11.4			16.1	6.2	5.7	5.5			4.5	2.1	2.3	2.3			2.5
93-00095	2.9	9.9		17.7				5.3		6.2				1.8		2.1		
93-00148	2.5	6.8		12.3				6.1		5.8				2.1		2.3		
93-00111	1.0					13.7	6.9					5.9	1.8					2.7
93-00162	0.6	4.7				11.9		7.5				2.2		1.7				2.2
MEAN	1.1	5.5	8.9	15.0	11.9	12.6	6.5	6.2	6.0	6.3	5.1	5.6	2.1	2.2	2.4	2.2	2.5	2.5
SD	0.9	2.7	4.8	2.7	4.6	4.8	0.6	0.7	0.6	0.6	0.5	1.7	0.3	0.4	0.3	0.1	0.4	0.5
N	33	24	26	3	12	23	29	24	25	3	6	24	28	24	25	3	6	24
MIN	0.3	1.8	1.6	12.3	6.8	5.6	4.9	4.9	4.7	5.8	4.4	2.2	1.5	1.5	1.8	2.1	2.0	1.5
MAX	3.9	10.4	19.7	17.7	21.0	21.4	7.5	7.8	7.1	6.9	5.8	11.3	2.8	2.9	2.9	2.3	3.1	3.7

TABLE 4D.

LISTING OF IN VITRO RED BLOOD CELL UNITS TESTED DURING POST THAW STORAGE FOR 7 DAYS

UNIT NO.	MCV (fL)						MCH (pg)						MCHC (g/dL)					
	WASH	DAYS POST WASH					WASH	DAYS POST WASH					WASH	DAYS POST WASH				
		1	3	4	5	7		1	3	4	5	7		1	3	4	5	7
8800592	90.7	90.7	100.0			83.1	29.5	29.5	33.0			28.0	32.6	32.6	33.0			33.7
8800568	90.4	90.4				72.2	28.1	28.1				27.8	31.1	31.1	34.9			38.6
8702476	102.2		98.8			92.3	31.9		32.0			32.0	31.2		32.4			34.7
8701773	90.9		92.4			92.8	29.2		30.4			30.5	32.1		32.9			32.8
8603736	97.6	86.0	91.9			88.1	28.7	29.0	31.2			30.1	29.4	33.8	33.9			34.2
8603716	98.1	85.6	93.0			83.3	30.2	29.8	33.9			30.3	30.8	34.9	36.4			36.3
8603532	94.4	94.2	82.9			80.1	29.9	31.2	29.2			28.3	31.6	33.1	35.2			35.4
8603464	96.2	98.2	92.8			88.6	30.9	26.5	33.3			30.2	31.5	27.0	35.9			34.1
8603722	89.6	95.4	88.9			80.7	26.7	32.1	29.4			23.7	29.8	33.6	33.1			29.3
8603858	104.9	92.7	99.5			91.3	30.5	30.1	32.8			34.0	29.1	32.4	33.0			37.2
8603701	90.6	88.7	95.9			91.1	29.3	29.1	31.9			30.8	32.3	32.8	33.3			33.8
8603702	91.6	97.0	97.8			96.7	29.4	29.8	30.2			31.5	32.1	30.7	30.7			32.6
8603733	87.0	91.4	93.4			88.9	28.3	29.9	30.0			31.0	32.5	32.7	32.1			34.9
8603810	97.6	96.3	90.3			85.4	33.3	32.3	31.7			33.9	34.1	33.5	35.7			39.7
8603817	91.5	85.1	96.2			99.5	30.6	30.9	31.3			33.6	33.4	32.4	33.0			33.8
8603833	86.5	97.3	96.1			97.5	30.3	30.4				32.3	35.0	31.3	32.6			33.1
8603717	94.7		90.6		87.2		29.5		29.9		29.4		31.2		33.0		33.7	
8603373	95.0		90.6		97.2		31.5		29.9		31.3		33.2		33.0		32.2	
8303814	89.1		85.3		84.1		29.0		28.7		28.9		32.5		33.6		34.3	
8603649	85.0		86.2		88.5		27.5		27.0		27.9		32.3		31.2		31.3	
8603703	96.0		91.7		94.7		29.8		29.9		30.2		31.0		32.6		31.9	
8603639	95.2		88.3		85.7		28.4		30.0		30.4		29.8		34.0		35.5	
93-00106	101.2	102.9		98.4			32.1	33.5		31.7			31.8	32.6		32.3		
93-00102	102.4	100.4	97.7				32.9	30.1	32.4			31.7	32.3	30.0	33.2			36.0
93-00156	101.5	100.0	99.7			99.1	31.6	29.7	33.8			32.4	31.2	29.7	33.9			33.7
93-00107	94.1	95.7				92.9	30.4	29.7				31.2	32.3	31.0				33.6
93-00154		95.5				90.9		29.8				30.6		31.3				33.7
93-00099	97.9	96.3	94.4				32.7		33.0				33.4	32.6	35.0			
93-00149	103.3	95.1	95.8			85.2	36.1	31.0	33.4			34.4	35.0	32.6	34.9			35.7
93-00095	94.9	80.0					30.3	31.6					32.0	39.4				
93-00148	94.7	91.4		88.4			31.0	30.8		29.8			32.8	33.6		33.8		
93-00111	98.5					97.8						32.2	32.5					32.9
93-00162		96.2				94.1		31.2				29.8		32.4				31.7
MEAN	94.9	93.4	93.2	93.4	89.6	89.6	30.3	30.3	31.2	30.8	29.7	30.9	32.0	32.4	33.6	33.1	33.2	34.4
SD	5.2	5.5	4.7	7.1	5.2	7.0	1.9	1.5	1.8	1.3	1.2	2.4	1.4	2.2	1.4	1.1	1.6	2.2
N	31	24	25	2	6	22	30	23	24	2	6	23	31	24	26	2	6	23
MIN	85.0	80.0	82.9	88.4	84.1	72.2	26.7	26.5	27.0	29.8	27.9	23.7	29.1	27.0	30.7	32.3	31.3	29.3
MAX	104.9	102.9	100.0	98.4	97.2	99.5	36.1	33.5	33.9	31.7	31.3	34.4	35.0	39.4	36.4	33.8	35.5	39.7

TABLE 5.

COMPARISON BETWEEN UNITS BEFORE AND AFTER CENTRIFUGATION TO CONCENTRATE THE RED BLOOD CELLS FOLLOWING 5 DAYS OF POST THAW STORAGE

UNIT NO.	HEMATOCRIT (%) DAY 5		HEMOLYSIS (%) DAY 5		SUP. HB (mg/dl) DAY 5		EXTRA K+ (mEq/L) DAY 5	
	PRE	POST	PRE	POST	PRE	POST	PRE	POST
8603717	30	80	4.5	0.6	546	653	6.8	6.8
8603373	41	80	2.7	0.3	556	460	9.6	9.7
8303814	35	80	9.2	1.3	1798	1733	14.4	14.1
8603649	40	78	3.1	0.6	642	663	11.1	10.7
8603703	43	80	3.9	0.7	1113	1049	16.7	16.9
8603639	40	75	14.2	3.4	3510	3210	21.0	21.4
9300348	41	85	1.8	0.3	396	471	11.3	8.7
9300232	41	84	6.2	0.8	1391	1434	18.5	15.9
9300337	33	85	2.3	0.3	364	514	8.2	9.3
9300333	32	87	4.6	0.4	706	920	11.5	12.9
9300205	40	84	4.9	0.7	1017	1241	13.5	12.5
9300463	41	86	4.2	0.5	963	1091	13.5	13.5
9300334	45	91	2.9	0.3	653	856	17.2	23.6
9300219	35	89	9.7	0.9	1626	2161	15.9	16.2
MEAN	38	83	5.3	0.8	1092	1175	13.5	13.7
SD	4	4	3.5	0.8	827	768	4.1	4.8
N	14	14	14	14	14	14	14	14
MIN	30	75	1.8	0.3	364	460	6.8	6.8
MAX	45	91	14.2	3.4	3510	3210	21.0	23.6
PAIRED t TEST						NS		NS
p		0.0001		0.0001		0.1400		0.9700

TABLE 6

SUMMARY DATA OF UNITS THAWED AND DEGLYCEROLIZED IN PRODUCTIVITY STUDIES

		POST-WASH VALUES
OSMOLALITY (mOsm/kg H20)		
	MEAN	339
	SD	37
	N	676
VOLUME (ml)		
	MEAN	426
	SD	18
	N	672
HEMATOCRIT (V%)		
	MEAN	36.4
	SD	6.0
	N	681
HEMOGLOBIN (gm/dl)		
	MEAN	11.4
	SD	1.9
	N	681
TOTAL CELLULAR HEMOGLOBIN (gm)		
	MEAN	47.9
	SD	8.4
	N	672
*IN VITRO RECOVERY (%)**		
	MEAN	79.6
	SD	13.7
	N	672
SUPERNATANT HEMOGLOBIN (mg/dl)		
DAY 0	**MEAN**	178
	SD	123
	N	680
DAY 7	**MEAN**	611
	SD	280
	N	691
BACTERIAL CULTURE (AEROBIC/ANAEROBIC)		
	# POSITIVE	0
	# NEGATIVE	716
BREAKAGE (%)		2.1 (16 OF 761 UNITS)

*Estimate assuming 60 gm of cellular hemoglobin pre-freeze

TABLE 7.

LISTING OF RED BLOOD CELL UNITS IN THE PRODUCTIVITY STUDY

STUDY #	UNIT #	POST-WASH SUPERNATANT OSMOLALITY (mOsm/kgH20)	VOLUME (ml)	HCT (V%)	HB (gm/dl)	TOTAL CELL HB (g)	ESTIMATED IN VITRO RECOVERY (%)	SUPERNATANT HEMOGLOBIN POST WASH (mg/dl) DAY 0	DAY 7	BACTERIAL CULTURE AEROBIC/ANAEROBIC DAY 0	DAY 14
1	1914050	366	382	32	9.7	36.1	60.2	342	969	NEG/NEG	NEG/NEG
1	1914096	350	424	41	12.6	53.1	88.5	110	375	NEG/NEG	NEG/NEG
1	1914124	374	401	44	13.5	53.7	89.5	209	837	NEG/NEG	NEG/NEG
1	1914327	307							947	NEG/NEG	NEG/NEG
1	1919051	306							997	NEG/NEG	NEG/NEG
1	2198518	328	357	32	9.8	34.7	57.8	154	353	NEG/NEG	NEG/NEG
1	2198543	340	390	37	11.2	42.8	71.4	331	595	NEG/NEG	NEG/NEG
1	2198550	545	513	4	1.1	0.6	1.1	1014	958	NEG/NEG	NEG/NEG
1	2198559	331	397	30	8.8	34.1	56.8	309	485	NEG/NEG	NEG/NEG
1	2198560	320	417	29	8.6	35.4	59.0	154	253	NEG/NEG	NEG/NEG
1	2198565	307	424	29	9.2	38.4	64.0	198	617	NEG/NEG	NEG/NEG
1	2198570		369	41	12.7	46.2	77.0	286	682	NEG/NEG	NEG/NEG
1	2198587	332	429	40	12.6	53.5	89.1	220	650	NEG/NEG	NEG/NEG
1	2198589	330	424	41	12.6	53.1	88.6	99	375	NEG/NEG	NEG/NEG
1	2199136	310	432	33	10.7	46.0	76.7	77	705	NEG/NEG	NEG/NEG
1	2199150	342	394	38	11.7	45.8	76.4	110	308	NEG/NEG	NEG/NEG
1	2202711	325	425	36	11.9	50.0	83.3	198	397	NEG/NEG	NEG/NEG
1	2202761	359	423	40	12.5	52.5	87.5	165	463	NEG/NEG	NEG/NEG
1	2202899	361	421	31	9.1	36.9	61.5	485	672	NEG/NEG	NEG/NEG
1	2203100	329	422	40	13	54.5	90.8	154	969	NEG/NEG	NEG/NEG
1	2203277	339	425	41	11.8	49.6	82.7	198	804	NEG/NEG	NEG/NEG
1	2204378	327	421	39	11.7	49.0	81.7	88	749	NEG/NEG	NEG/NEG
1	2204380	317	423	38	11.7	49.2	82.1	99	881	NEG/NEG	NEG/NEG
1	2204385	361	431	38	11.2	47.7	79.5	198	573	NEG/NEG	NEG/NEG
1	2204406		426	32	10.5	42.4	70.7	77	540	NEG/NEG	NEG/NEG
1	2204416		422	36	11.8	49.5	82.5	110	870	NEG/NEG	NEG/NEG
1	2527252	353	398	29	8.9	34.1	56.8	463	639	NEG/NEG	NEG/NEG
1	2527268	323	422	36	11.2	46.9	78.2	110	507	NEG/NEG	NEG/NEG
1	2527315	343	392	30	10.1	38.6	64.4	353	595	NEG/NEG	NEG/NEG
1	2527317	323	421	35	10.7	44.7	74.5	143	573	NEG/NEG	NEG/NEG
1	2527319	305	418	35	11	45.6	76.0	110	1146	NEG/NEG	NEG/NEG
1	2527328	364	412	42	13.7	55.9	93.1	220	573	NEG/NEG	NEG/NEG
1	2527336	341	375	37	11.3	41.9	69.8	198	617	NEG/NEG	NEG/NEG
1	2527338	318	416	40	12.3	50.7	84.5	154	408	NEG/NEG	NEG/NEG
1	2527342	323	413	39	11.9	48.7	81.1	198	661	NEG/NEG	NEG/NEG
1	2527349	346	398	40	12.7	49.9	83.2	253	397	NEG/NEG	NEG/NEG
1	2527357	315	414	32	9.9	40.6	67.7	121	485	NEG/NEG	NEG/NEG
1	2527358	310	421	30	9.2	38.2	63.7	154	419	NEG/NEG	NEG/NEG
1	2527444	351	405	38	11.6	46.5	77.5	176	397	NEG/NEG	NEG/NEG
1	2527648	361	408	45	13.8	55.9	93.1	176	881	NEG/NEG	NEG/NEG
1	2527659	316	429	32	10.5	44.7	74.5	132	353	NEG/NEG	NEG/NEG
1	2527672	318	392	31	10.1	39.0	65.1	198	529	NEG/NEG	NEG/NEG
1	2527681	326	405	34	10.9	43.7	72.8	187	397	NEG/NEG	NEG/NEG
1	2527686	305	419	32	10.4	43.2	71.9	132	969	NEG/NEG	NEG/NEG
1	2527692	331	420	34	10.2	42.4	70.7	154	639	NEG/NEG	NEG/NEG
1	2527699	311	417	43	13.3	55.3	92.1	88	463	NEG/NEG	NEG/NEG
1	2527724	336	418	39	12.1	50.3	83.8	110	441	NEG/NEG	NEG/NEG
1	2527789	338	408	28	8.7	34.7	57.8	264	463	NEG/NEG	NEG/NEG
1	2527802	323	420	39	12.4	51.6	86.1	154	837	NEG/NEG	NEG/NEG
1	2527853	332	426	37	11.1	47.0	78.3	143	353	NEG/NEG	NEG/NEG
1	2527916	345	430	38	10.9	46.6	77.7	88	507	NEG/NEG	NEG/NEG
1	2527978	379	401	34	10.3	40.3	67.2	342	617	NEG/NEG	NEG/NEG
1	2527991	382	429	34	10.9	45.4	75.6	507	771	NEG/NEG	NEG/NEG
1	2527995	373	405	36	11.4	45.8	76.3	121	639	NEG/NEG	NEG/NEG
1	2527998	326	427	30	9.1	38.2	63.7	187	595	NEG/NEG	NEG/NEG
1	2528074	327	427	34	10.6	44.5	74.2	242	617	NEG/NEG	NEG/NEG
1	2528088	338	430	36	12.3	52.4	87.4	143	617	NEG/NEG	NEG/NEG
1	2528096		425	40	13.4	56.8	94.6	77	749	NEG/NEG	NEG/NEG
1	2528173	336	403	39	13.2	52.9	88.2	121	837	NEG/NEG	NEG/NEG
1	2528252	355	427	40	12.5	53.0	88.3	154	837	NEG/NEG	NEG/NEG
1	2528355	317	416	32	9.6	39.5	65.8	154	984	NEG/NEG	NEG/NEG
1	2528357	335	271	7	1.9	4.0	6.7	463	529	NEG/NEG	NEG/NEG
1	2528387	336	410	28	8.3	33.2	55.4	286	628	NEG/NEG	NEG/NEG
1	2528439	331	430	35	11.2	47.6	79.4	187	886	NEG/NEG	NEG/NEG
1	2528449	312	418	27	7.9	32.3	53.8	242	661	NEG/NEG	NEG/NEG
1	2528453	345	420	42	12.6	52.6	87.7	110	342	NEG/NEG	NEG/NEG
1	2528455	310	429	23	6.7	28.3	47.2	143	209	NEG/NEG	NEG/NEG
1	2528462	330	416	40	12.6	51.9	86.6	209	1036	NEG/NEG	NEG/NEG

TABLE 7.

LISTING OF RED BLOOD CELL UNITS IN THE PRODUCTIVITY STUDY

STUDY #	UNIT #	POST-WASH SUPERNATANT OSMOLALITY (mOsm/kgH20)	VOLUME (ml)	HCT (V%)	HB (gm/dl)	TOTAL CELL HB (g)	ESTIMATED IN VITRO RECOVERY (%)	SUPERNATANT HEMOGLOBIN POST WASH (mg/dl) DAY 0	DAY 7	BACTERIAL CULTURE AEROBIC/ANAEROBIC DAY 0	DAY 14
1	2528463	345	418	37	11.7	48.6	81.0	143	419	NEG/NEG	NEG/NEG
1	2528467	327	425	38	12.1	51.1	85.1	132	892	NEG/NEG	NEG/NEG
1	2528471	354	425	40	12.3	51.9	86.5	154	430	NEG/NEG	NEG/NEG
1	2528477	325	419	40	13	54.2	90.3	132	947	NEG/NEG	NEG/NEG
1	2528478	317	417	25	7.8	32.0	53.4	154	705	NEG/NEG	NEG/NEG
1	2528479	398	490	10	2.7	12.1	20.1	264	220	NEG/NEG	NEG/NEG
1	2528482	350	406	36	11.3	45.2	75.4	264	1939	NEG/NEG	NEG/NEG
1	2528493		410	42	12.8	52.2	87.0	110	969	NEG/NEG	NEG/NEG
1	2528690	336	411	45	13.5	55.1	91.9	132	297	NEG/NEG	NEG/NEG
1	2528691	314	424	41	12.4	52.3	87.2	110	375	NEG/NEG	NEG/NEG
1	2528694	316	420	34	11	45.9	76.5	99	334	NEG/NEG	NEG/NEG
1	2529352	317	425	38	12.2	51.4	85.7	154	441	NEG/NEG	NEG/NEG
1	2529355	361	424	37	11.8	49.4	82.3	220	507	NEG/NEG	NEG/NEG
1	2529367	326	429	36	10.8	45.7	76.1	231	528	NEG/NEG	NEG/NEG
1	3415083	387	421	42	12.9	53.7	89.5	264	1036	NEG/NEG	NEG/NEG
1	3415084	370	414	36	10.9	44.7	74.4	176	485	NEG/NEG	NEG/NEG
1	3415093	319	420	35	10.3	42.9	71.5	143	485	NEG/NEG	NEG/NEG
1	3415098	349	418	39	11.8	48.7	81.2	231	881	NEG/NEG	NEG/NEG
1	3415105	333	408	34	11.2	45.3	75.5	154	925	NEG/NEG	NEG/NEG
1	3415116	317	415	28	8	33.1	55.2	44	606	NEG/NEG	NEG/NEG
1	3415119	331	408	33	10.5	42.4	70.7	176	452	NEG/NEG	NEG/NEG
1	3415126	352	417	40	12.2	50.5	84.2	165	474	NEG/NEG	NEG/NEG
1	3415129	326	425	34	10.4	43.9	73.2	88	738	NEG/NEG	NEG/NEG
1	3415131	338	414	36	11	45.2	75.3	154	738	NEG/NEG	NEG/NEG
1	3415145	323	425	33	9.9	41.3	68.9	264	870	NEG/NEG	NEG/NEG
1	3415152	320	401	31	10.3	41.0	68.3	132	683	NEG/NEG	NEG/NEG
1	3415165	335							452	NEG/NEG	NEG/NEG
1	3415184	345							1278	NEG/NEG	NEG/NEG
1	3415187	313	411	33	10.4	42.4	70.7	99	485	NEG/NEG	NEG/NEG
1	3415190	371	411	31	9.4	37.8	63.0	309	529	NEG/NEG	NEG/NEG
1	3415192	353	408	40	11.8	47.3	78.8	331	881	NEG/NEG	NEG/NEG
1	3415193	328	418	35	12	49.9	83.1	132		NEG/NEG	NEG/NEG
1	3415197	314	410	28	8.7	35.4	59.1	66	264	NEG/NEG	NEG/NEG
1	3415201	344	430	36	10.8	45.5	75.9	320	771	NEG/NEG	NEG/NEG
1	3415207	354	423	27	8.2	34.2	57.0	143		NEG/NEG	NEG/NEG
1	3415216	327	423	38	12.3	51.4	85.6	253	507	NEG/NEG	NEG/NEG
1	3415220	310	409	31	9.8	39.9	66.4	88	330	NEG/NEG	NEG/NEG
1	3415249	329	424	38	11.5	48.4	80.7	132	474	NEG/NEG	NEG/NEG
1	3415250	313	415	38	12.3	50.8	84.7	110	595	NEG/NEG	NEG/NEG
1	3415270		417	31	9.8	40.5	67.5	143	705	NEG/NEG	NEG/NEG
1	3415273	325	432	29	9.2	39.1	65.1	209	947	NEG/NEG	NEG/NEG
1	3415283	363	408	35	10.9	44.2	73.6	110	661	NEG/NEG	NEG/NEG
1	3415286	345							584	NEG/NEG	NEG/NEG
1	3415292	355	430	38	11.4	48.0	79.9	397	738	NEG/NEG	NEG/NEG
1	3415293									NEG/NEG	NEG/NEG
1	3415294									NEG/NEG	NEG/NEG
1	3415316	319	420	37	11.3	47.1	78.5	132	573	NEG/NEG	NEG/NEG
1	3415322	318	421	32	10.4	43.5	72.6	66	419	NEG/NEG	NEG/NEG
1	3415324	307	417	33	10.6	43.7	72.9	154	419	NEG/NEG	NEG/NEG
1	3415325	326	412	33	8.5	34.6	57.7	154	463	NEG/NEG	NEG/NEG
1	3415332	325	415	37	11.9	49.0	81.6	154	1102	NEG/NEG	NEG/NEG
1	3415334	350	418	30	8.9	36.4	60.6	275	661	NEG/NEG	NEG/NEG
1	3415335								386	NEG/NEG	NEG/NEG
1	3415339	331	431	29	8.8	36.9	61.5	342		NEG/NEG	NEG/NEG
1	3415353	304	428	33	10.9	46.3	77.2	110	441	NEG/NEG	NEG/NEG
1	3415355	327	426	38	11.9	50.3	83.8	143	859	NEG/NEG	NEG/NEG
1	3415360	338	426	35	10.9	46.1	76.8	143	375	NEG/NEG	NEG/NEG
1	3415362	321	421	34	10.5	43.8	73.1	132	496	NEG/NEG	NEG/NEG
1	3415367	340							441	NEG/NEG	NEG/NEG
1	3415369	321	423	27	8.4	34.8	58.0	231	187	NEG/NEG	NEG/NEG
1	3415371	320	425	31	9.5	39.8	66.3	198	749	NEG/NEG	NEG/NEG
1	3415379	317	423	39	12	50.4	84.1	110	639	NEG/NEG	NEG/NEG
1	3415381	315	433	38	11.9	51.1	85.2	132	606	NEG/NEG	NEG/NEG
1	3415394	331	428	37	12.1	51.5	85.8	132	297	NEG/NEG	NEG/NEG
1	3415399	336	435	33	10.1	43.1	71.8	286	573	NEG/NEG	NEG/NEG
1	3415403	349	432	38	12.3	52.3	87.2	286	1157	NEG/NEG	NEG/NEG
1	3415405	339	412	40	12.4	50.5	84.1	242	661	NEG/NEG	NEG/NEG
1	3415409	313	428	30	9.1	38.4	64.0	198	551	NEG/NEG	NEG/NEG

TABLE 7.

LISTING OF RED BLOOD CELL UNITS IN THE PRODUCTIVITY STUDY

STUDY #	UNIT #	POST-WASH SUPERNATANT OSMOLALITY (mOsm/kgH20)	VOLUME (ml)	HCT (V%)	HB (gm/dl)	TOTAL CELL HB (g)	ESTIMATED IN VITRO RECOVERY (%)	SUPERNATANT HEMOGLOBIN POST WASH (mg/dl) DAY 0	DAY 7	BACTERIAL CULTURE AEROBIC/ANAEROBIC DAY 0	DAY 14
1	3415412		423	35	10.6	44.4	73.9	187	617	NEG/NEG	NEG/NEG
1	3415418	316	419	35	10.1	41.9	69.8	154	573	NEG/NEG	NEG/NEG
1	3415423	322	424	38	12	50.5	84.1	143	474	NEG/NEG	NEG/NEG
1	3415432	336	424	40	11.6	48.9	81.5	132	342	NEG/NEG	NEG/NEG
1	3415437	337	413	38	12.5	51.2	85.4	176		NEG/NEG	NEG/NEG
1	3415438	371	405	35	10	38.9	64.9	595	2203	NEG/NEG	NEG/NEG
1	3415444	353	412	35	9.7	39.7	66.2	110	419	NEG/NEG	NEG/NEG
1	3415453	323	420	36	10.8	45.0	75.0	132	859	NEG/NEG	NEG/NEG
1	3415491	343							925	NEG/NEG	NEG/NEG
1	3415492		420	36	10.9	45.4	75.7	132	529	NEG/NEG	NEG/NEG
1	3423058		428	6	1.2	2.1	3.6	749	661	NEG/NEG	NEG/NEG
1	3423072	341	419	33	10.3	42.5	70.8	253	914	NEG/NEG	NEG/NEG
1	3423126	425	412	39	12.4	50.5	84.2	231	507	NEG/NEG	NEG/NEG
1	3864853	330	419	37	11.4	47.4	79.1	110	264	NEG/NEG	NEG/NEG
1	3864921		420	31	9.5	39.6	66.1	88	407	NEG/NEG	NEG/NEG
1	3864933	316	420	35	11.2	46.7	77.9	99	353	NEG/NEG	NEG/NEG
1	3864944	334	430	41	12.5	53.2	88.7	187	441	NEG/NEG	NEG/NEG
1	3865207	318	413	38	21	86.2	100.0	242	617	NEG/NEG	NEG/NEG
1	3865215	441	409	45	13.3	54.0	90.1	143	319	NEG/NEG	NEG/NEG
1	3865241	316							485	NEG/NEG	NEG/NEG
1	3865273	302	418	26	9.6	39.7	66.1	154	965	NEG/NEG	NEG/NEG
1	3865372	342							463	NEG/NEG	NEG/NEG
1	3865419	320	420	35	10.7	44.7	74.4	88	364	NEG/NEG	NEG/NEG
1	3865475	321	424	41	12.3	52.0	86.6	66	220	NEG/NEG	NEG/NEG
1	3865485	317	415	22	6.1	24.9	41.5	132	198	NEG/NEG	NEG/NEG
1	3865509	319	419	41	11.5	47.9	79.8	121	639	NEG/NEG	NEG/NEG
1	3865527	331							463	NEG/NEG	NEG/NEG
1	3865540	352	425	39	12.3	51.9	86.5	132	1113	NEG/NEG	NEG/NEG
1	4071922	339	423	40	12.1	50.9	84.9	110	881	NEG/NEG	NEG/NEG
1	4071937	347	426	42	13	55.2	91.9	110	529	NEG/NEG	NEG/NEG
1	4071939	333	425	40	12.5	52.1	86.9	397	275	NEG/NEG	NEG/NEG
1	4071942	346	427	44	12.8	54.3	90.6	110	474	NEG/NEG	NEG/NEG
1	4071982	363	428	44	13.5	57.5	95.9	110	364	NEG/NEG	NEG/NEG
1	4071995	356	428	37	11.7	49.7	82.9	143	507	NEG/NEG	NEG/NEG
1	4071996	338	427	39	12	50.9	84.8	143	353	NEG/NEG	NEG/NEG
1	4071997	320	424	39	11.8	49.8	83.0	110	771	NEG/NEG	NEG/NEG
1	4072045	331	419	42	13.1	54.2	90.3	264	683	NEG/NEG	NEG/NEG
1	4072098	313	416	40	12.4	51.3	85.5	143	485	NEG/NEG	NEG/NEG
1	4072142	351	412	44	13.3	54.6	90.9	110	474	NEG/NEG	NEG/NEG
1	4072156	320	432	38	12.6	54.2	90.3	77	573	NEG/NEG	NEG/NEG
1	4072157	346	421	42	11.3	47.3	78.8	143	297	NEG/NEG	NEG/NEG
1	4072162	330	414	32	10.4	42.7	71.2	110	617	NEG/NEG	NEG/NEG
1	4072163	353	430	41	12.5	53.4	89.1	99	1190	NEG/NEG	NEG/NEG
1	4072180	329	412	34	9.8	39.8	66.3	220	518	NEG/NEG	NEG/NEG
1	4072232	339	420	40	13.2	55.1	91.8	154	441	NEG/NEG	NEG/NEG
1	4072239	347	412	36	11.9	48.4	80.7	253	397	NEG/NEG	NEG/NEG
1	4072281	344	427	44	13.6	57.8	96.3	143	793	NEG/NEG	NEG/NEG
1	4072296	333	433	42	12.6	54.2	90.4	132	485	NEG/NEG	NEG/NEG
1	4072367	310	420	44	14.3	59.8	99.6	110	749	NEG/NEG	NEG/NEG
1	4072493	312	416	35	11.3	46.6	77.7	154	474	NEG/NEG	NEG/NEG
1	4072583	345	425	44	14	59.0	98.3	187	705	NEG/NEG	NEG/NEG
1	4072608	312	421	42	13.1	54.9	91.4	143	1058	NEG/NEG	NEG/NEG
1	4072621	354	418	38	12	49.7	82.8	198		NEG/NEG	NEG/NEG
1	4072650	357	419	40	12.3	51.0	85.0	198	529	NEG/NEG	NEG/NEG
1	4072767	320	420	40	12	50.2	83.7	99	551	NEG/NEG	NEG/NEG
1	4072822	332	430	33	10.5	44.6	74.3	187	441	NEG/NEG	NEG/NEG
1	4072847	328	427	41	12.4	52.4	87.4	187	1348	NEG/NEG	NEG/NEG
1	4072944	322	416	38	11.7	48.3	80.5	154	1102	NEG/NEG	NEG/NEG
1	4072959	328	421	42	13.3	55.8	93.0	110	727	NEG/NEG	NEG/NEG
1	4073034	314	420	38	12.5	52.1	86.8	165	727	NEG/NEG	NEG/NEG
1	4073070	316	404	37	11.6	46.6	77.6	121	1190	NEG/NEG	NEG/NEG
1	4073073	345	413	44	13.8	56.7	94.5	121	936	NEG/NEG	NEG/NEG
1	4073074	342	417	40	11.9	49.2	82.1	165	1080	NEG/NEG	NEG/NEG
1	4073077	329	418	33	10.6	43.9	73.2	143	683	NEG/NEG	NEG/NEG
1	4073168		413	41	12.5	51.2	85.3	187	826	NEG/NEG	NEG/NEG
1	4073175	364	424	37	11.4	47.9	79.9	132	1234	NEG/NEG	NEG/NEG
1	4073202	323	416	47	14.3	59.2	98.6	121	760	NEG/NEG	NEG/NEG
1	4073206	329	419	42	13.4	55.6	92.6	220	639	NEG/NEG	NEG/NEG

TABLE 7.

LISTING OF RED BLOOD CELL UNITS IN THE PRODUCTIVITY STUDY

STUDY #	UNIT #	POST-WASH SUPERNATANT OSMOLALITY (mOsm/kgH20)		POST-WASH VOLUME (ml)	POST-WASH HCT (V%)	POST-WASH HB (gm/dl)	POST-WASH TOTAL CELL HB (g)	ESTIMATED IN VITRO RECOVERY (%)		SUPERNATANT HEMOGLOBIN POST WASH (mg/dl) DAY 0	DAY 7		BACTERIAL CULTURE AEROBIC/ANAEROBIC DAY 0	DAY 14
1	4073211	326		416	45	13.3	54.9	91.5		165	1013		NEG/NEG	NEG/NEG
1	4073217	317		421	37	12	50.3	83.9		55	908		NEG/NEG	NEG/NEG
1	4073233	322		419	43	13.8	57.5	95.9		132	716		NEG/NEG	NEG/NEG
1	4073237	322		422	43	13.3	55.8	93.1		121	1267		NEG/NEG	NEG/NEG
1	4073243	309		411	41	13.1	53.3	88.9		220	562		NEG/NEG	NEG/NEG
1	4073245	307		412	36	11.3	45.5	75.9		397	375		NEG/NEG	NEG/NEG
1	4073250	322		415	44	13.8	56.8	94.6		198	1113		NEG/NEG	NEG/NEG
1	4073268	378		415	46	14.2	58.7	97.8		110	595		NEG/NEG	NEG/NEG
1	4073280	326		418	39	12.5	51.8	86.3		187	892		NEG/NEG	NEG/NEG
1	4073286	548									441		NEG/NEG	NEG/NEG
1	4073288	315		437	37	11.9	51.7	86.1		132	606		NEG/NEG	NEG/NEG
1	4073297	335		404	37	11.4	45.9	76.4		77	749		NEG/NEG	NEG/NEG
1	4073315	335		408	45	13.7	55.4	92.4		198	650		NEG/NEG	NEG/NEG
1	4073337	349		413	38	12	49.0	81.6		209	771		NEG/NEG	NEG/NEG
1	4073341	320		428	37	11.8	50.2	83.7		121	452		NEG/NEG	NEG/NEG
1	4073342	327		421	31	13	54.5	90.8		88	793		NEG/NEG	NEG/NEG
1	4073398	341		405	42	12.2	48.8	81.3		275	749		NEG/NEG	NEG/NEG
1	4073470	333		418	38	11.6	47.7	79.5		309	747		NEG/NEG	NEG/NEG
1	4106608	313		422	36	11.5	48.2	80.3		143	617		NEG/NEG	NEG/NEG
1	4106635	328		407	31	9.9	40.0	66.7		88	837		NEG/NEG	NEG/NEG
1	4106637	346		380	37	11.3	42.4	70.7		209	386		NEG/NEG	NEG/NEG
1	4106794	329		421	39	11.9	49.3	82.2		297	705		NEG/NEG	NEG/NEG
1	4106887	310		428	39	12	51.2	85.3		55	286		NEG/NEG	NEG/NEG
1	4106904			429	31	10.2	43.6	72.7		44	275		NEG/NEG	NEG/NEG
1	4106906			425	33	9.9	41.7	69.4		143	617		NEG/NEG	NEG/NEG
1	4106914	311									683		NEG/NEG	NEG/NEG
1	4323695	332		408	40	12.8	52.0	86.7		55	595		NEG/NEG	NEG/NEG
1	4323697	352		355	24	6.9	23.8	39.6		275	364		NEG/NEG	NEG/NEG
1	4323714			382	45	14	52.8	88.1		275	1763		NEG/NEG	NEG/NEG
1	4323779	315									441		NEG/NEG	NEG/NEG
1	4612328	302		414	26	7.7	31.5	52.4		143	496		NEG/NEG	NEG/NEG
1	4612330	307		426	22	6.9	28.9	48.2		143	661		NEG/NEG	NEG/NEG
1	4656052	315		425	41	12.5	52.6	87.6		209	661		NEG/NEG	NEG/NEG
1	4656055	307		425	30	9.1	38.2	63.7		165	507		NEG/NEG	NEG/NEG
1	4656310	331		405	34	10.9	43.9	73.2		99	606		NEG/NEG	NEG/NEG
1	4656311	335		411	43	12.7	51.6	86.0		242	793		NEG/NEG	NEG/NEG
1	4656312			420	33	9.8	40.7	67.9		165	771		NEG/NEG	NEG/NEG
1	4656319	359		414	36	10.6	43.5	72.4		165	397		NEG/NEG	NEG/NEG
1	4656335	334		429	39	12.6	53.5	89.2		176	441		NEG/NEG	NEG/NEG
1	4656343	347		422	37	11.5	48.4	80.7		66			NEG/NEG	NEG/NEG
1	4656346	343		427	41	11.7	49.3	82.2		231	408		NEG/NEG	NEG/NEG
1	4656348			412	37	11.4	46.4	77.3		220	617		NEG/NEG	NEG/NEG
1	4672913	304		413	40	12.4	50.8	84.6		154	903		NEG/NEG	NEG/NEG
1	4776769	308		437	38	12.1	52.6	87.7		121	573		NEG/NEG	NEG/NEG
1	4776780	342		422	43	12.9	53.8	89.7		275	463		NEG/NEG	NEG/NEG
1	4776799	358		417	41	12.5	51.8	86.4		132	727		NEG/NEG	NEG/NEG
1	4776813	304		421	43	13.6	57.0	95.0		121	176		NEG/NEG	NEG/NEG
1	4776908	328		415	35	10.6	43.5	72.6		154	683		NEG/NEG	NEG/NEG
1	4776914	341		422	42	13.3	55.7	92.9		132	727		NEG/NEG	NEG/NEG
1	4777512	348		429	40	12.5	53.1	88.5		209	661		NEG/NEG	NEG/NEG
1	4777529	372		430	36	10.7	41.0	68.3		242	661		NEG/NEG	NEG/NEG
1	5041024	310		408	41	12.9	52.4	87.3		132	749		NEG/NEG	NEG/NEG
1	5041042	345		402	42	12.8	51.2	85.3		143	727		NEG/NEG	NEG/NEG
1	5041050	312		408	33	10.6	43.0	71.6		88	331		NEG/NEG	NEG/NEG
1	5041134	339		408	40	12.7	51.2	85.3		253	683		NEG/NEG	NEG/NEG
1	5041163	343		398	39	12.2	47.8	79.7		320	485		NEG/NEG	NEG/NEG
1	5041166	338		424	36	11.1	46.8	77.9		110	705		NEG/NEG	NEG/NEG
1	5041178	310		426	37	11.9	50.5	84.2		66	397		NEG/NEG	NEG/NEG
1	5041215	345		432	40	12.7	54.5	90.9		110	540		NEG/NEG	NEG/NEG
1	5041234	329		427	34	10.6	44.9	74.8		132	485		NEG/NEG	NEG/NEG
1	5041302	354		409	37	11.1	44.9	74.9		187	452		NEG/NEG	NEG/NEG
1	5041313	358		410	34	10.3	41.6	69.3		253	485		NEG/NEG	NEG/NEG
1	5041315	417		477	4	1.3	5.7	9.4		121	419		NEG/NEG	NEG/NEG
1	5041352	418		405	36	11.2	44.9	74.8		165	264		NEG/NEG	NEG/NEG
1	5041356	338		388	40	12.1	46.5	77.5		222	397		NEG/NEG	NEG/NEG
1	5041410	338		427	40	12.7	53.8	89.7		165	661		NEG/NEG	NEG/NEG
1	5041489	326		431	31	9.2	39.3	65.4		121	617		NEG/NEG	NEG/NEG
1	5041522	334		431	31	9.8	41.3	68.9		297	1146		NEG/NEG	NEG/NEG

TABLE 7.

LISTING OF RED BLOOD CELL UNITS IN THE PRODUCTIVITY STUDY

STUDY #	UNIT #	POST-WASH SUPERNATANT OSMOLALITY (mOsm/kgH20)	VOLUME (ml)	HCT (V%)	HB (gm/dl)	TOTAL CELL HB (g)	ESTIMATED IN VITRO RECOVERY (%)	SUPERNATANT HEMOGLOBIN POST WASH (mg/dl) DAY 0	DAY 7	BACTERIAL CULTURE AEROBIC/ANAEROBIC DAY 0	DAY 14
1	5041567	298	427	29	9.5	40.4	67.3	55	474	NEG/NEG	NEG/NEG
1	5041571	334	418	36	11.6	48.1	80.1	154	705	NEG/NEG	NEG/NEG
1	5107176	343	425	37	11.3	47.6	79.4	165	205	NEG/NEG	NEG/NEG
1	5107192	366	411	43	12.4	50.6	84.4	165	330	NEG/NEG	NEG/NEG
1	5107193	327	412	45	12.9	49.3	82.1	1685	749	NEG/NEG	NEG/NEG
1	5107210	349	432	41	13.1	56.2	93.6	143		NEG/NEG	NEG/NEG
1	5107224	349	413	39	13	53.3	88.8	154	562	NEG/NEG	NEG/NEG
1	5107321	329	417	42	12.5	51.9	86.5	88	319	NEG/NEG	NEG/NEG
1	5162185	389	423	29	8.8	36.2	60.4	331	738	NEG/NEG	NEG/NEG
1	5162206	309	421	32	7.7	32.1	53.6	88	661	NEG/NEG	NEG/NEG
1	5162209	338	421	39	11.6	48.3	80.5	198	286	NEG/NEG	NEG/NEG
1	5162217	318	420	38	12.2	50.9	84.8	154	771	NEG/NEG	NEG/NEG
1	5162220	355	425	43	12.4	52.3	87.2	154	419	NEG/NEG	NEG/NEG
1	5162226	417	477	16	4.6	20.8	34.6	286	851	NEG/NEG	NEG/NEG
1	5162231	350	391	38	12.3	47.7	79.4	176	297	NEG/NEG	NEG/NEG
1	5162247	347	405	23	6.5	26.0	43.4	88	1058	NEG/NEG	NEG/NEG
1	5162248	387	426	30	9	37.4	62.3	331	441	NEG/NEG	NEG/NEG
1	5162262	319	423	39	13	54.7	91.2	121	925	NEG/NEG	NEG/NEG
1	5162263	360	419	41	12.4	51.5	85.9	165	826	NEG/NEG	NEG/NEG
1	5162264	352	430	36	10.9	46.2	77.1	220	397	NEG/NEG	NEG/NEG
1	5162267	329	429	30	9.4	40.1	66.8	99	1410	NEG/NEG	NEG/NEG
1	5162272	325	428	39	12.4	52.6	87.6	165	375	NEG/NEG	NEG/NEG
1	5162273	345	431	38	12.2	52.2	86.9	154	529	NEG/NEG	NEG/NEG
1	5162276	369	417	43	13.5	55.6	92.6	320	793	NEG/NEG	NEG/NEG
1	5162289	318	418	32	10.1	41.6	69.3	209	132	NEG/NEG	NEG/NEG
1	5162291	352	408	39	11.5	46.6	77.6	143	793	NEG/NEG	NEG/NEG
1	5162300	332	427	39	12.4	52.2	87.0	275	441	NEG/NEG	NEG/NEG
1	5162304	350	422	40	12.5	52.4	87.3	154	1278	NEG/NEG	NEG/NEG
1	5162308	338	425	35	10.8	45.6	75.9	132	947	NEG/NEG	NEG/NEG
1	5162313	352	413	40	12.6	51.8	86.3	121	419	NEG/NEG	NEG/NEG
1	5162314	383	397	34	10.8	42.2	70.3	242	1168	NEG/NEG	NEG/NEG
1	5162315	337	339	42	13.2	44.6	74.3	99	1278	NEG/NEG	NEG/NEG
1	5162318		423	39	12.2	51.3	85.5	99	419	NEG/NEG	NEG/NEG
1	5162324	316	417	19	5.7	23.3	38.9	132	342	NEG/NEG	NEG/NEG
1	5162355	324	422	41	12.6	52.7	87.8	187	220	NEG/NEG	NEG/NEG
1	5162371	333	421	39	12	50.0	83.4	176	595	NEG/NEG	NEG/NEG
1	5162396	332	417	34	11.3	47.0	78.3	44	1278	NEG/NEG	NEG/NEG
1	5162529	322	399	37	11.2	44.5	74.1	99	286	NEG/NEG	NEG/NEG
1	5162553	304	423	24	8.1	34.0	56.6	88	397	NEG/NEG	NEG/NEG
1	5213053	307	427	32	10.2	43.0	71.7	198	220	NEG/NEG	NEG/NEG
1	5213056	313	423	36	11.6	48.8	81.3	88	573	NEG/NEG	NEG/NEG
1	5213059	353	360	38	12	42.2	70.3	474	441	NEG/NEG	NEG/NEG
1	5213239		427	16	5.1	21.2	35.4	154	1013	NEG/NEG	NEG/NEG
1	5505633	327	431	41	13	55.6	92.7	132	331	NEG/NEG	NEG/NEG
1	5505665	358	428	25	7	28.8	48.0	353	661	NEG/NEG	NEG/NEG
1	5505670		425	41	12.1	50.9	84.9	198	518	NEG/NEG	NEG/NEG
1	5505672	396	419	36	10.3	42.6	71.0	220	529	NEG/NEG	NEG/NEG
1	5505684	311	413	34	10.2	41.4	69.1	253	330	NEG/NEG	NEG/NEG
1	5604569		426	37	12.5	53.0	88.3	110	264	NEG/NEG	NEG/NEG
1	5604574	312	424	26	7.1	29.8	49.6	110	518	NEG/NEG	NEG/NEG
1	5703297	440							551	NEG/NEG	NEG/NEG
1	5703299		426	37	11	45.9	76.5	375	881	NEG/NEG	NEG/NEG
1	5703301	355							517	NEG/NEG	NEG/NEG
1	5703365	408	324	46	13.8	44.4	74.0	154		NEG/NEG	NEG/NEG
1	5703369	334	414	50	15.9	65.7	100.0	88	441	NEG/NEG	NEG/NEG
1	5703383	353	428	43	13.1	55.8	93.1	77	903	NEG/NEG	NEG/NEG
1	5703388	321	421	44	14	58.5	97.5	154	540	NEG/NEG	NEG/NEG
1	5703390	350	416	32	9.7	39.9	66.5	154	551	NEG/NEG	NEG/NEG
1	5703394	350	428	38	11.9	50.4	84.1	176	496	NEG/NEG	NEG/NEG
1	5703406	341	427	40	12.8	54.3	90.4	154	815	NEG/NEG	NEG/NEG
1	5703427	340	425	41	12.5	52.6	87.7	198	551	NEG/NEG	NEG/NEG
1	5703437	358	429	45	14.2	60.5	100.0	154	529	NEG/NEG	NEG/NEG
1	5703444	313	422	47	14.7	61.6	100.0	220	683	NEG/NEG	NEG/NEG
1	5703447	342	399	43	13.2	52.4	87.3	132	441	NEG/NEG	NEG/NEG
1	5703454	364	421	42	12.9	54.1	90.2	110	507	NEG/NEG	NEG/NEG
1	5703462	333	408	39	12	48.9	81.4	55	353	NEG/NEG	NEG/NEG
1	5703463	315	441	42	12.3	53.8	89.7	154	252	NEG/NEG	NEG/NEG
1	5703633	387	424	41	12.5	52.1	86.8	353	176	NEG/NEG	NEG/NEG

TABLE 7.

LISTING OF RED BLOOD CELL UNITS IN THE PRODUCTIVITY STUDY

STUDY #	UNIT #	POST-WASH SUPERNATANT OSMOLALITY (mOsm/kgH20)	VOLUME (ml)	HCT (V%)	HB (gm/dl)	TOTAL CELL HB (g)	ESTIMATED IN VITRO RECOVERY (%)	SUPERNATANT HEMOGLOBIN POST WASH (mg/dl) DAY 0	DAY 7	BACTERIAL CULTURE AEROBIC/ANAEROBIC DAY 0	DAY 14
1	5703637	322	422	43	13	54.5	90.9	132	441	NEG/NEG	NEG/NEG
1	5703640	359	424	35	11	45.9	76.5	286	507	NEG/NEG	NEG/NEG
1	5703667	346	426	42	12.7	53.7	89.5	165	330	NEG/NEG	NEG/NEG
1	5703668	360	402	42	12.7	50.8	84.7	110	463	NEG/NEG	NEG/NEG
1	5703686	331	422	34	10.9	45.7	76.1	110	551	NEG/NEG	NEG/NEG
1	5703690	401	428	40	12	50.6	84.4	286	308	NEG/NEG	NEG/NEG
1	5703692	396	428	37	11.6	48.8	81.4	309	815	NEG/NEG	NEG/NEG
1	5703709	326	428	40	12.1	51.4	85.7	154	540	NEG/NEG	NEG/NEG
1	7062069	355	405	36	11.5	46.1	76.9	154	386	NEG/NEG	NEG/NEG
1	7062107	333	435	39	12.7	55.0	91.6	110	573	NEG/NEG	NEG/NEG
1	7062259	352	402	43	13.6	54.2	90.4	176	551	NEG/NEG	NEG/NEG
1	7062262	325	400	36	11.3	44.8	74.7	121	793	NEG/NEG	NEG/NEG
1	7062263	412	413	41	13.1	53.4	89.0	286	584	NEG/NEG	NEG/NEG
1	7062297	316	416	31	9.6	39.5	65.9	154	727	NEG/NEG	NEG/NEG
1	7062344	337	414	42	10.4	42.7	71.1	154	419	NEG/NEG	NEG/NEG
1	7062350	378	432	43	13.1	56.1	93.4	198	264	NEG/NEG	NEG/NEG
1	7062363	358	432	20	6.6	27.9	46.6	154	705	NEG/NEG	NEG/NEG
1	7062693	318	422	41	12.5	52.4	87.4	110	529	NEG/NEG	NEG/NEG
1	7062701	335	421	40	12.3	51.6	85.9	110	903	NEG/NEG	NEG/NEG
1	7062709	330	416	41	13.2	54.6	91.0	121	485	NEG/NEG	NEG/NEG
1	7062712	357	392	38	11.7	45.4	75.6	198	330	NEG/NEG	NEG/NEG
1	7062713	325	378	42	12.6	47.4	79.0	110	1454	NEG/NEG	NEG/NEG
1	7062716	332	404	37	11.6	46.3	77.1	231	463	NEG/NEG	NEG/NEG
1	7062728	328	431	34	10.8	46.0	76.7	176	419	NEG/NEG	NEG/NEG
1	7063122	331	422	38	11.8	49.1	81.8	264	474	NEG/NEG	NEG/NEG
1	7063140	313	423	40	13.1	55.1	91.8	132	727	NEG/NEG	NEG/NEG
1	7063303	351	418	42	13	53.8	89.6	220	1388	NEG/NEG	NEG/NEG
1	7063313	353	424	40	12.2	50.6	84.4	441	485	NEG/NEG	NEG/NEG
1	7063561	521	426	46	13.9	58.0	96.7	551	507	NEG/NEG	NEG/NEG
1	7063585	317	416	41	13.2	54.7	91.1	99	683	NEG/NEG	NEG/NEG
1	7063598	350	421	51	16.5	69.0	100.0	220	474	NEG/NEG	NEG/NEG
1	7063606		424	44	13.7	57.6	96.1	209	682	NEG/NEG	NEG/NEG
1	7063608	330	424	41	13.3	56.0	93.3	154	485	NEG/NEG	NEG/NEG
1	7063612	358	427	46	13.6	57.7	96.1	143	441	NEG/NEG	NEG/NEG
1	7063619	388	421	35	10.8	44.7	74.5	286	683	NEG/NEG	NEG/NEG
1	7063669	337	426	43	13.2	55.7	92.8	198	529	NEG/NEG	NEG/NEG
1	7063670	325	423	39	12.6	53.0	88.4	88	386	NEG/NEG	NEG/NEG
1	7063677	351	427	45	13.9	59.1	98.5	99	264	NEG/NEG	NEG/NEG
1	7136227	355	411	39	11.5	46.9	78.1	154	507	NEG/NEG	NEG/NEG
1	7136244	334	412	38	11.7	48.0	80.0	99	694	NEG/NEG	NEG/NEG
1	7136249	328	426	40	12.4	52.4	87.4	154	485	NEG/NEG	NEG/NEG
1	7136290	314	407	38	11.5	46.5	77.5	110	617	NEG/NEG	NEG/NEG
1	7136341	360	427	42	13.1	55.5	92.5	187	683	NEG/NEG	NEG/NEG
1	7136343	314	426	35	11	46.4	77.3	187	485	NEG/NEG	NEG/NEG
1	7136348	325	425	41	12.5	52.8	88.1	99	474	NEG/NEG	NEG/NEG
1	7136350	347	428	36	11.5	48.7	81.2	165	1939	NEG/NEG	NEG/NEG
1	7136362	328	421	39	11.8	49.3	82.1	154	1146	NEG/NEG	NEG/NEG
1	7136375	340	416	38	11.6	48.3	80.5		551	NEG/NEG	NEG/NEG
1	7136405	333	411	38	11.5	46.4	77.4	342	419	NEG/NEG	NEG/NEG
1	7136451	318	418	38	12.7	52.9	88.2	77	705	NEG/NEG	NEG/NEG
1	7136604	344	431	35	10.3	43.8	73.0	209	617	NEG/NEG	NEG/NEG
1	7136709	335	418	42	12.6	52.4	87.4	77		NEG/NEG	NEG/NEG
1	7136717	723	480	38	11.7	55.9	93.2	88	286	NEG/NEG	NEG/NEG
1	7200481	321	417	41	13.3	55.1	91.8	143	209	NEG/NEG	NEG/NEG
1	7200525	328	423	25	7.2	30.0	49.9	165	551	NEG/NEG	NEG/NEG
1	7200526	334							496	NEG/NEG	NEG/NEG
1	7200725	324	424	38	11.8	49.6	82.7	154	419	NEG/NEG	NEG/NEG
1	7200738	313	415	37	11.7	48.2	80.3	132	441	NEG/NEG	NEG/NEG
1	7200742	337	420	40	12.6	52.5	87.5	176	1321	NEG/NEG	NEG/NEG
1	7200796	331	415	36	11.5	47.3	78.9	165	694	NEG/NEG	NEG/NEG
1	7200819	337	490	40	12.4	52.9	88.2	154	573	NEG/NEG	NEG/NEG
1	7200822	337	419	36	11.5	47.2	78.7	364	485	NEG/NEG	NEG/NEG
1	7200861	327	416	36	11.1	45.8	76.4	132	639	NEG/NEG	NEG/NEG
1	7200977	326	418	37	12.5	51.9	86.5	154	573	NEG/NEG	NEG/NEG
1	7201006	353	415	42	12.8	49.3	82.2	1574	683	NEG/NEG	NEG/NEG
1	7201016	326	411	41	12.7	51.8	86.3	176	881	NEG/NEG	NEG/NEG
1	7201022	311	414	39	12.2	50.1	83.5	154	1763	NEG/NEG	NEG/NEG
1	7201391	333	403	34	11.2	44.9	74.9	88	1454	NEG/NEG	NEG/NEG

TABLE 7.

LISTING OF RED BLOOD CELL UNITS IN THE PRODUCTIVITY STUDY

STUDY #	UNIT #	POST-WASH SUPERNATANT OSMOLALITY (mOsm/kgH20)	VOLUME (ml)	HCT (V%)	HB (gm/dl)	TOTAL CELL HB (g)	ESTIMATED IN VITRO RECOVERY (%)	SUPERNATANT HEMOGLOBIN POST WASH (mg/dl) DAY 0	DAY 7	BACTERIAL CULTURE AEROBIC/ANAEROBIC DAY 0	DAY 14
1	7201404	313	416	34	10.8	44.7	74.5	77	749	NEG/NEG	NEG/NEG
1	7201413	312	419	36	11	46.0	76.6	55	617	NEG/NEG	NEG/NEG
1	7201475	360	430	39	12.7	54.3	90.5	121	463	NEG/NEG	NEG/NEG
1	7246602		408	45	13.7	55.4	92.3	222	331	NEG/NEG	NEG/NEG
1	7266606	372	428	38	11.2	47.3	78.9	220	1542	NEG/NEG	NEG/NEG
1	7608665	307	416	31	8.7	35.9	59.8	110		NEG/NEG	NEG/NEG
1	7608666	343	418	39	11.9	49.3	82.1	165	980	NEG/NEG	NEG/NEG
1	7608667	319	416	44	14.2	58.9	98.2	55	496	NEG/NEG	NEG/NEG
1	7608670	330	411	27	8.1	33.0	54.9	110	286	NEG/NEG	NEG/NEG
1	7608671	344	412	43	12.8	52.4	87.3	132	308	NEG/NEG	NEG/NEG
1	7608672	327	409	41	12.6	51.4	85.6	88	430	NEG/NEG	NEG/NEG
1	7608673	343							397	NEG/NEG	NEG/NEG
1	7608675	305	412	28	9	36.8	61.3	110	419	NEG/NEG	NEG/NEG
1	7608679	312	425	32	9.9	41.9	69.9	66	319	NEG/NEG	NEG/NEG
1	7608680	330	419	42	12.6	52.5	87.5	110	1278	NEG/NEG	NEG/NEG
1	7608682	337	417	32	9.4	38.7	64.5	165	474	NEG/NEG	NEG/NEG
1	7608684	373							297	NEG/NEG	NEG/NEG
1	7608711	331	419	40	12	49.7	82.8	209	253	NEG/NEG	NEG/NEG
1	7608732	356	425	35	10.9	46.0	76.6	132	1168	NEG/NEG	NEG/NEG
1	7608750	816	485	40	12.2	58.8	98.1	110	275	NEG/NEG	NEG/NEG
1	7608751	299	417	39	12.1	50.3	83.8	77	397	NEG/NEG	NEG/NEG
1	9000784	321	416	49	15.1	62.5	100.0	121	529	NEG/NEG	NEG/NEG
2	1915050	315	442	29	9.4	41.0	68.4	165	675	NEG/NEG	NEG/NEG
2	1919032	339	439	33	10.4	44.8	74.7	264	408	NEG/NEG	NEG/NEG
2	2199913	362	447	36	10.8	47.8	79.7	165	584	NEG/NEG	NEG/NEG
2	2202709	346	447	39	11.6	51.4	85.7	132	750	NEG/NEG	NEG/NEG
2	2202720	341	456	37	11.5	51.7	86.2	242	573	NEG/NEG	NEG/NEG
2	2202722	485	419	44	11.7	47.0	78.3	856	1234	NEG/NEG	NEG/NEG
2	2202728	320	442	37	11.6	50.9	84.9	110		NEG/NEG	NEG/NEG
2	2203250	340	446	36	11.8	52.3	87.2	110	727	NEG/NEG	NEG/NEG
2	2204394	333	438	40	12.8	55.7	92.9	143	595	NEG/NEG	NEG/NEG
2	2204397	342	444	39	12.2	53.7	89.5	154	419	NEG/NEG	NEG/NEG
2	2204418	379	434	40	12.4	52.8	88.0	386	661	NEG/NEG	NEG/NEG
2	2204457	324	444	34	10.8	47.6	79.3	121	683	NEG/NEG	NEG/NEG
2	2527391	361	444	36	11.2	49.2	82.0	198	815	NEG/NEG	NEG/NEG
2	2528308	363	439	36	11.4	49.5	82.5	198	507	NEG/NEG	NEG/NEG
2	2528444	371	441	39	12	52.5	87.4	165	463	NEG/NEG	NEG/NEG
2	2528447	348	447	35	11	48.7	81.2	165	463	NEG/NEG	NEG/NEG
2	2528470	359	437	37	11.2	48.5	80.8	154	430	NEG/NEG	NEG/NEG
2	2528685	325	424	42	13.4	56.5	94.2	146	529	NEG/NEG	NEG/NEG
2	2529348	318	449	30	9.9	44.2	73.7	88	297	NEG/NEG	NEG/NEG
2	3415076	338	443	34	11.2	49.1	81.8	176		NEG/NEG	NEG/NEG
2	3415096	327	439	33	10	43.4	72.4	143	859	NEG/NEG	NEG/NEG
2	3415103	318	432	33	10.3	44.0	73.3	176	562	NEG/NEG	NEG/NEG
2	3415113	318	443	29	9.3	40.8	68.1	121	386	NEG/NEG	NEG/NEG
2	3415115	315	449	25	8.3	36.8	61.4	121	705	NEG/NEG	NEG/NEG
2	3415120	329	441	24	7.3	31.8	52.9	121	496	NEG/NEG	NEG/NEG
2	3415124	317	415	38	11.8	48.2	80.3	309	286	NEG/NEG	NEG/NEG
2	3415128									NEG/NEG	NEG/NEG
2	3415169	331	435	34	10.1	43.4	72.3	198	408	NEG/NEG	NEG/NEG
2	3415214	320	437	35	11.4	49.5	82.4	121	980	NEG/NEG	NEG/NEG
2	3415222	310	445	31	10.1	44.7	74.5	88	242	NEG/NEG	NEG/NEG
2	3415233	313	449	31	10.1	44.9	74.8	154	518	NEG/NEG	NEG/NEG
2	3415252	319	443	40	12.5	55.0	91.7	110	694	NEG/NEG	NEG/NEG
2	3415264	307	438	41	13.1	57.0	95.1	132	342	NEG/NEG	NEG/NEG
2	3415285	330	439	40	12.3	53.4	88.9	220	837	NEG/NEG	NEG/NEG
2	3415287	338	431	38	12.7	54.2	90.4	220	639	NEG/NEG	NEG/NEG
2	3415289	324	439	40	12.3	53.5	89.1	187	749	NEG/NEG	NEG/NEG
2	3415300	322	434	33	10.6	45.5	75.8	176	375	NEG/NEG	NEG/NEG
2	3415307	317	438	31	9.9	42.9	71.5	165	551	NEG/NEG	NEG/NEG
2	3415308	355	447	34	10.8	47.6	79.4	209	738	NEG/NEG	NEG/NEG
2	3415320	382	446	39	11.8	51.7	86.1	342	837	NEG/NEG	NEG/NEG
2	3415331	331	446	33	10.3	45.3	75.5	220	736	NEG/NEG	NEG/NEG
2	3415337									NEG/NEG	NEG/NEG
2	3415370	348	451	31	9.9	43.7	72.8	320	672	NEG/NEG	NEG/NEG
2	3415377	328	447	35	10.8	47.6	79.3	220	584	NEG/NEG	NEG/NEG
2	3415382	350	449	29	9.6	42.4	70.7	209	749	NEG/NEG	NEG/NEG
2	3415435	332		32	9.7			198	452	NEG/NEG	NEG/NEG

TABLE 7.

LISTING OF RED BLOOD CELL UNITS IN THE PRODUCTIVITY STUDY

STUDY #	UNIT #	POST-WASH SUPERNATANT OSMOLALITY (mOsm/kgH20)	VOLUME (ml)	HCT (V%)	HB (gm/dl)	TOTAL CELL HB (g)	ESTIMATED IN VITRO RECOVERY (%)	SUPERNATANT HEMOGLOBIN POST WASH (mg/dl) DAY 0	DAY 7	BACTERIAL CULTURE AEROBIC/ANAEROBIC DAY 0	DAY 14
2	3415457	307	453	33	10.3	46.2	77.0	143	837	NEG/NEG	NEG/NEG
2	3415458	305	441	31	9.7	42.3	70.4	154	297	NEG/NEG	NEG/NEG
2	3415471	342	439	44	13	56.6	94.3	176	496	NEG/NEG	NEG/NEG
2	3415483	304	445	36	11.3	50.0	83.3	110	639	NEG/NEG	NEG/NEG
2	3415493	335	491	39	11.9	50.9	84.9	143	881	NEG/NEG	NEG/NEG
2	3415517	349	438	41	12.2	53.1	88.5	132	375	NEG/NEG	NEG/NEG
2	3423128	401	452	19	5.8	24.2	40.3	562	716	NEG/NEG	NEG/NEG
2	3423129	307	441	35	11.4	49.9	83.2	99	1135	NEG/NEG	NEG/NEG
2	3864748	337	432	37	11.9	50.9	84.9	187	474	NEG/NEG	NEG/NEG
2	3864952	327	440	41	12.8	55.8	93.1	187	616	NEG/NEG	NEG/NEG
2	3864969	326	434	41	12.9	55.7	92.9	121	958	NEG/NEG	NEG/NEG
2	3865317	340	439	40	12.7	55.4	92.4	143	331	NEG/NEG	NEG/NEG
2	3865478	322	442	37	11	48.1	80.2	165	353	NEG/NEG	NEG/NEG
2	3865561	333		34	10.7			121	551	NEG/NEG	NEG/NEG
2	4071936	371	427	37	11.7	49.4	82.4	198	364	NEG/NEG	NEG/NEG
2	4071956	342	443	38	12.1	53.2	88.7	154	463	NEG/NEG	NEG/NEG
2	4071985	332	432	36	11.7	50.3	83.8	110	771	NEG/NEG	NEG/NEG
2	4072100	397	430	34	10.4	43.7	72.8	386	782	NEG/NEG	NEG/NEG
2	4072102	346	443	40	13.3	58.7	97.8	110	507	NEG/NEG	NEG/NEG
2	4072110	318	436	42	13.6	58.9	98.2	132	1190	NEG/NEG	NEG/NEG
2	4072209	314	441	40	12.5	54.8	91.4	121	991	NEG/NEG	NEG/NEG
2	4072212	319	444	36	11.2	49.5	82.5	88	584	NEG/NEG	NEG/NEG
2	4072226	331	436	39	12.2	52.7	87.9	176	551	NEG/NEG	NEG/NEG
2	4072259	329	435	40	12.5	54.1	90.1	132	1542	NEG/NEG	NEG/NEG
2	4072266	351	434	36	11.4	48.9	81.5	220	1080	NEG/NEG	NEG/NEG
2	4072403	341	438	36	11.4	49.2	81.9	286	749	NEG/NEG	NEG/NEG
2	4072450	321		40	12.8			231	518	NEG/NEG	NEG/NEG
2	4072468	361	437	38	12.4	53.7	89.6	176	672	NEG/NEG	NEG/NEG
2	4072486	354								NEG/NEG	NEG/NEG
2	4072491	337	434	38	12.3	53.0	88.3	176	639	NEG/NEG	NEG/NEG
2	4072524	332	436	40	13.1	56.6	94.3	231	573	NEG/NEG	NEG/NEG
2	4072578	317	433	43	14.2	61.1	100.0	165	496	NEG/NEG	NEG/NEG
2	4072641	374	436	40	12.2	52.8	88.1	154	408	NEG/NEG	NEG/NEG
2	4072650									NEG/NEG	NEG/NEG
2	4072671	353	434	41	13	56.1	93.5	132	1036	NEG/NEG	NEG/NEG
2	4072683	340	435	41	13.4	58.0	96.6	132	760	NEG/NEG	NEG/NEG
2	4072846	320	442	35	10.9	47.5	79.2	242	595	NEG/NEG	NEG/NEG
2	4073061	311	449	41	12.6	56.3	93.8	99	463	NEG/NEG	NEG/NEG
2	4073171	322	438	42	13.4	58.5	97.4	77	430	NEG/NEG	NEG/NEG
2	4073185		445	36	11.6	51.1	85.2	176	804	NEG/NEG	NEG/NEG
2	4073198	322	433	38	12	51.5	85.9	143	815	NEG/NEG	NEG/NEG
2	4073290	329	437	21	6.6	28.2	47.0	176	694	NEG/NEG	NEG/NEG
2	4073330	350	449	39	12.8	57.1	95.1	165	352	NEG/NEG	NEG/NEG
2	4073471	329	399	35	11	43.6	72.6	121	419	NEG/NEG	NEG/NEG
2	4106711	339	437	7	2.1	8.2	13.7	242	364	NEG/NEG	NEG/NEG
2	4106748	319	433	40	13.2	56.8	94.6	176	551	NEG/NEG	NEG/NEG
2	4106783	381	450	39	12.2	54.2	90.3	242	1388	NEG/NEG	NEG/NEG
2	4106798	329	445	33	10.5	46.3	77.2	143	518	NEG/NEG	NEG/NEG
2	4106803	329	442	37	12	52.8	88.0	88	727	NEG/NEG	NEG/NEG
2	4106814	303	441	34	10.9	47.7	79.6	121	319	NEG/NEG	NEG/NEG
2	4106848	363	454	39	12.6	56.7	94.4	209	551	NEG/NEG	NEG/NEG
2	4106850	340	441	41	13.1	57.2	95.3	231	1157	NEG/NEG	NEG/NEG
2	4106854	325	433	37	12	51.4	85.7	209	760	NEG/NEG	NEG/NEG
2	4106861	362	442	39	12.5	54.9	91.5	121	297	NEG/NEG	NEG/NEG
2	4106891	317	442	34	11	48.3	80.6	99	551	NEG/NEG	NEG/NEG
2	4612467	317		29	9.2			154	661	NEG/NEG	NEG/NEG
2	4656048	347	452	33	10.6	47.5	79.2	121	496	NEG/NEG	NEG/NEG
2	4656333	337	451	39	12.2	54.5	90.8	176	881	NEG/NEG	NEG/NEG
2	4656340	335	436	36	11.8	51.2	85.4	88	562	NEG/NEG	NEG/NEG
2	4656341	332	433	41	13.3	57.3	95.4	132	463	NEG/NEG	NEG/NEG
2	4704010	328	438	36	11.2	48.6	81.1	165	794	NEG/NEG	NEG/NEG
2	4777502	328	439	49	14.7	64.3	100.0	143	507	NEG/NEG	NEG/NEG
2	4777505	331	429	41	13.6	58.0	96.6	176	353	NEG/NEG	NEG/NEG
2	5041230	325	441	42	12.6	55.0	91.7	187	529	NEG/NEG	NEG/NEG
2	5073300	306								NEG/NEG	NEG/NEG
2	5162174	331	446	34	10.6	46.8	78.0	154	705	NEG/NEG	NEG/NEG
2	5162175	347	436	41	13.2	57.0	95.1	198	1058	NEG/NEG	NEG/NEG
2	5162197	357	434	39	12.6	54.0	90.0	264	463	NEG/NEG	NEG/NEG

TABLE 7.

LISTING OF RED BLOOD CELL UNITS IN THE PRODUCTIVITY STUDY

STUDY #	UNIT #	POST-WASH SUPERNATANT OSMOLALITY (mOsm/kgH20)	POST-WASH VOLUME (ml)	POST-WASH HCT (V%)	POST-WASH HB (gm/dl)	POST-WASH TOTAL CELL HB (g)	ESTIMATED IN VITRO RECOVERY (%)	SUPERNATANT HEMOGLOBIN POST WASH (mg/dl) DAY 0	SUPERNATANT HEMOGLOBIN POST WASH (mg/dl) DAY 7	BACTERIAL CULTURE AEROBIC/ANAEROBIC DAY 0	BACTERIAL CULTURE AEROBIC/ANAEROBIC DAY 14
2	5162202	323	436	35	11.3	48.8	81.3	176	947	NEG/NEG	NEG/NEG
2	5162230	312	435	43	12.8	55.5	92.5	99	419	NEG/NEG	NEG/NEG
2	5162255	329		40	12.6			110	925	NEG/NEG	NEG/NEG
2	5162298	363	444	33	10.7	46.9	78.1	220	540	NEG/NEG	NEG/NEG
2	5162309	328	432	37	11.8	50.4	84.0	209	562	NEG/NEG	NEG/NEG
2	5162310									NEG/NEG	NEG/NEG
2	5162312	366	445	38	11.8	51.8	86.3	275	672	NEG/NEG	NEG/NEG
2	5162316	333	452	21	6.8	29.5	49.1	353	353	NEG/NEG	NEG/NEG
2	5162341	327	442	36	11.7	51.4	85.6	132	738	NEG/NEG	NEG/NEG
2	5213247	315	448	31	10.1	44.8	74.7	132	419	NEG/NEG	NEG/NEG
2	5505666	360	441	40	12.8	56.0	93.4	132	485	NEG/NEG	NEG/NEG
2	5505696	351	436	46	14.5	62.8	100.0	176	551	NEG/NEG	NEG/NEG
2	5703300		418	36	10.7	44.5	74.2	88	551	NEG/NEG	NEG/NEG
2	5703389	363	446	38	11.6	51.2	85.3	209	639	NEG/NEG	NEG/NEG
2	5703398	333	435	39	12.5	54.1	90.1	110	408	NEG/NEG	NEG/NEG
2	5703489	350	441	43	13.7	60.0	100.0	154	474	NEG/NEG	NEG/NEG
2	5703757	321	445	33	10.1	44.4	74.1	176	408	NEG/NEG	NEG/NEG
2	5703785	348	440	30	9.5	40.8	68.1	309	727	NEG/NEG	NEG/NEG
2	5703792	358	443	41	13	57.2	95.3	143	1234	NEG/NEG	NEG/NEG
2	5703827	377	445	37	11.3	49.7	82.9	176	474	NEG/NEG	NEG/NEG
2	5703945	319	434	44	13.1	56.5	94.1	154	1278	NEG/NEG	NEG/NEG
2	5703960	315	445	34	10.7	47.2	78.6	143	639	NEG/NEG	NEG/NEG
2	5703964	347	435	20	6.2	25.8	43.0	342	584	NEG/NEG	NEG/NEG
2	5703969	319	442	31	9.7	42.5	70.8	143	1025	NEG/NEG	NEG/NEG
2	5703988	358	442	30	8.7	37.7	62.8	242	496	NEG/NEG	NEG/NEG
2	5704006	309	443	28	8.7	38.0	63.3	176	375	NEG/NEG	NEG/NEG
2	5704010									NEG/NEG	NEG/NEG
2	5704012	329	443	39	11.9	52.3	87.1	143	1058	NEG/NEG	NEG/NEG
2	5865561									NEG/NEG	NEG/NEG
2	6072651	319	442	35	11.1	48.1	80.1	364	297	NEG/NEG	NEG/NEG
2	7062293	334	443	41	12.7	55.9	93.1	154	375	NEG/NEG	NEG/NEG
2	7062301	323	442	43	13.2	58.0	96.6	154	617	NEG/NEG	NEG/NEG
2	7062504	347	441	40	12.2	53.4	89.0	165	397	NEG/NEG	NEG/NEG
2	7063315	333	444	36	11.5	50.7	84.5	143		NEG/NEG	NEG/NEG
2	7063554	344	439	38	11.9	52.0	86.6	110	397	NEG/NEG	NEG/NEG
2	7068726								264	NEG/NEG	NEG/NEG
2	7136300	340	436	40	11.8	51.0	85.0	154	727	NEG/NEG	NEG/NEG
2	7136377	356	442	36	11.2	49.0	81.7	187	474	NEG/NEG	NEG/NEG
2	7136447	340	447	41	13	57.7	96.1	154	881	NEG/NEG	NEG/NEG
2	7136676	325	441	48	14.3	62.7	100.0	143	463	NEG/NEG	NEG/NEG
2	7136703	354	433	38	11.9	51.0	85.1	198	452	NEG/NEG	NEG/NEG
2	7136719	339	432	36	11.1	47.1	78.6	309	969	NEG/NEG	NEG/NEG
2	7136724	334	449	43	13.9	62.0	100.0	154	969	NEG/NEG	NEG/NEG
2	7136725	325	437	38	12.6	54.4	90.7	209	485	NEG/NEG	NEG/NEG
2	7200803	315	444	39	12.5	55.1	91.8	143	639	NEG/NEG	NEG/NEG
2	7200810	331	439	39	12.5	54.6	90.9	110	990	NEG/NEG	NEG/NEG
2	7201017	354	441	40	12.7	55.7	92.8	99	628	NEG/NEG	NEG/NEG
2	7201020	371		38	11.7			320	562	NEG/NEG	NEG/NEG
2	7201106									NEG/NEG	NEG/NEG
2	7201394	330	434	34	10.5	45.3	75.5	110	705	NEG/NEG	NEG/NEG
2	7201436	325	447	36	11.6	51.5	85.9	110	441	NEG/NEG	NEG/NEG
2	7201439	328	440	35	11.2	48.9	81.5	121		NEG/NEG	NEG/NEG
2	7246598	326	444	31	9.7	42.8	71.3	110	419	NEG/NEG	NEG/NEG
2	7251577	326	445	29	9.7	42.5	70.9	198	441	NEG/NEG	NEG/NEG
2	7251579	310	440	29	8.9	38.6	64.4	176	595	NEG/NEG	NEG/NEG
2	7251587	339		36	11.3			253	386	NEG/NEG	NEG/NEG
2	7251594	326	441	40	13	57.2	95.3	77	518	NEG/NEG	NEG/NEG
2	7251595	331	438	40	12.1	52.0	86.7	364	419	NEG/NEG	NEG/NEG
2	7251600	338	435	31	9.2	39.6	65.9	143	441	NEG/NEG	NEG/NEG
2	7251604	334	443	36	11.2	49.3	82.1	121	375	NEG/NEG	NEG/NEG
2	7251615	342	435	37	11.4	49.3	82.1	121	506	NEG/NEG	NEG/NEG
2	7251616	388	449	30	9.1	38.8	64.7	639	1036	NEG/NEG	NEG/NEG
2	7251672	352	450	35	10.5	46.7	77.9	188	452	NEG/NEG	NEG/NEG
2	7608716	327	448	34	11	48.8	81.3	154	375	NEG/NEG	NEG/NEG
2	7608724	338	437	44	13.5	58.6	97.7	132	782	NEG/NEG	NEG/NEG
2	7608726	340	438	35	10.9	47.3	78.9	132	441	NEG/NEG	NEG/NEG
2	7608730	333	437	43	14	60.8	100.0	154	650	NEG/NEG	NEG/NEG
2	7608733	336	436	38	11.9	51.5	85.9	154	562	NEG/NEG	NEG/NEG

TABLE 7.

LISTING OF RED BLOOD CELL UNITS IN THE PRODUCTIVITY STUDY

STUDY #	UNIT #	POST-WASH SUPERNATANT OSMOLALITY (mOsm/kgH20)	VOLUME (ml)	HCT (V%)	HB (gm/dl)	TOTAL CELL HB (g)	ESTIMATED IN VITRO RECOVERY (%)	SUPERNATANT HEMOGLOBIN POST WASH (mg/dl) DAY 0	DAY 7	BACTERIAL CULTURE AEROBIC/ANAEROBIC DAY 0	DAY 14
2	7608734	329	441	37	11.6	50.6	84.3	187	430	NEG/NEG	NEG/NEG
2	7608757	333	437	40	12.8	55.5	92.6	132	430	NEG/NEG	NEG/NEG
2	7608759	325	442	34	10.8	47.4	78.9	132	551	NEG/NEG	NEG/NEG
2	9200881	317	439	36	10.9	47.5	79.2	132	1366	NEG/NEG	NEG/NEG
2	9200884	339	439	34	10.6	46.8	77.9	231	958	NEG/NEG	NEG/NEG
2	9200908	321	438	35	10.7	46.5	77.6	99	595	NEG/NEG	NEG/NEG
2	9200909	344	438	34	11.4	49.5	82.5	143	441	NEG/NEG	NEG/NEG
2	9200911	330	442	24	7.7	33.4	55.7	198	628	NEG/NEG	NEG/NEG
2	9200912	314	445	40	12.6	55.8	93.0	110	529	NEG/NEG	NEG/NEG
2	9200914	314	436	39	12.4	53.9	89.8	66	551	NEG/NEG	NEG/NEG
2	9200915	317	433	34	10.8	46.3	77.2	154	983	NEG/NEG	NEG/NEG
2	9200917	316	444	31	9.9	43.6	72.7	110	1002	NEG/NEG	NEG/NEG
2	9200918	316	428	36	12	51.0	84.9	132	1212	NEG/NEG	NEG/NEG
2	9200919	660	475	38	12	56.5	94.1	176	881	NEG/NEG	NEG/NEG
2	9200920	308	438	23	7.1	30.6	51.1	132	242	NEG/NEG	NEG/NEG
2	9200921	337	432	48	14.3	61.5	100.0	143	661	NEG/NEG	NEG/NEG
2	9200927	448	434	43	13.3	57.0	95.0	320	1146	NEG/NEG	NEG/NEG
2	9200929								815	NEG/NEG	NEG/NEG
2	9200930								397	NEG/NEG	NEG/NEG
2	9200933	405	441	39	12.1	53.0	88.3	132	353	NEG/NEG	NEG/NEG
2	9200935	312	428	34	11.4	48.6	81.0	88	507	NEG/NEG	NEG/NEG
2	9200941	312	445	40	12.5	55.4	92.3	110	430	NEG/NEG	NEG/NEG
2	9200942	310	442	37	11.8	51.6	86.0	187	551	NEG/NEG	NEG/NEG
2	9200943								441	NEG/NEG	NEG/NEG
2	9200944	327	436	39	12.2	52.9	88.1	121	353	NEG/NEG	NEG/NEG
2	9200945	360	436	39	12.2	52.9	88.2	99	353	NEG/NEG	NEG/NEG
2	9200945	361	405	33	10	40.1	66.9	132	253	NEG/NEG	NEG/NEG
2	9200947	362	425	43	11.9	50.0	83.4	220	375	NEG/NEG	NEG/NEG
2	9200948	347	378	38	11.2	42.0	70.0	176	375	NEG/NEG	NEG/NEG
2	9200949	305	446	15	4.8	21.2	35.3	66	99	NEG/NEG	NEG/NEG
2	9200950	370		33	10.4			275	561	NEG/NEG	NEG/NEG
2	9200952	341	442	35	11	48.1	80.2	187	308	NEG/NEG	NEG/NEG
2	9200953	343	438	47	13.8	60.1	100.0	132	407	NEG/NEG	NEG/NEG
2	9200955	319	428	36	11.4	48.5	80.9	77	319	NEG/NEG	NEG/NEG
2	9200956	335	435	29	9.1	39.1	65.2	165	397	NEG/NEG	NEG/NEG
2	9200957	316	414	34	10.7	44.0	73.4	99	838	NEG/NEG	NEG/NEG
2	9200958	358	435	41	12.5	54.1	90.1	143	364	NEG/NEG	NEG/NEG
2	9200959	351	379	37	11.3	42.6	70.9	110	121	NEG/NEG	NEG/NEG
2	9200960	352	434	33	10.6	45.6	76.0	132	253	NEG/NEG	NEG/NEG
2	9200961	310	443	35	11	48.4	80.6	110	375	NEG/NEG	NEG/NEG
2	9200963	322	442	36	11.3	49.7	82.8	88	452	NEG/NEG	NEG/NEG
2	9200964	326	401	42	12.8	51.0	85.0	154	308	NEG/NEG	NEG/NEG
2	9200965	316	440	41	12.6	55.2	92.0	88	683	NEG/NEG	NEG/NEG
2	9200966	334	423	36	10.9	45.9	76.4	88	507	NEG/NEG	NEG/NEG
2	9200967	333	431	39	12.6	54.0	90.0	121	540	NEG/NEG	NEG/NEG
2	9200969	314	440	30	9.5	41.4	69.1	110	330	NEG/NEG	NEG/NEG
2	9200984	348	427	36	11.6	48.9	81.5	242	496	NEG/NEG	NEG/NEG
2	9200985	353	441	28	9.1	39.3	65.5	253	573	NEG/NEG	NEG/NEG
2	9200987	332	443	34	10.9	47.7	79.5	198	1024	NEG/NEG	NEG/NEG
2	9201002	378	437	37	11	47.7	79.5	132	441	NEG/NEG	NEG/NEG
2	9201003	319	440	42	12.9	56.3	93.8	176	397	NEG/NEG	NEG/NEG
2	9201008	305	429	40	12.3	52.4	87.4	121	837	NEG/NEG	NEG/NEG
2	9201010	316	434	37	11.5	49.6	82.7	110	518	NEG/NEG	NEG/NEG
2	9201016								727	NEG/NEG	NEG/NEG
2	9201022	310	435	30	9.3	40.0	66.7	132	308	NEG/NEG	NEG/NEG
2	9201025	328	442	36	11.1	48.4	80.7	220	638	NEG/NEG	NEG/NEG
2	9201026	333	441	39	11.7	51.3	85.5	110	518	NEG/NEG	NEG/NEG
2	9201031	375	440	41	12.3	53.6	89.4	187	507	NEG/NEG	NEG/NEG
2	9201068	327	442	37	11.7	51.2	85.3	176		NEG/NEG	NEG/NEG
2	9201069	323	435	30	9.2	39.4	65.7	187	650	NEG/NEG	NEG/NEG
2	9201071	339	439	32	10.6	46.1	76.9	132	815	NEG/NEG	NEG/NEG
2	9201072	319	438	34	10.8	47.0	78.3	110	485	NEG/NEG	NEG/NEG
2	9201073	318	432	36	11.3	47.8	79.7	375	419	NEG/NEG	NEG/NEG
2	9201075	315	437	26	7.9	34.0	56.7	143	595	NEG/NEG	NEG/NEG
2	9201076	327	441	28	8.1	35.3	58.8	132	1542	NEG/NEG	NEG/NEG
2	9201077	332	439	20	5.7	24.3	40.4	220	474	NEG/NEG	NEG/NEG
2	9201078	317	432	36	11.5	49.4	82.3	132	518	NEG/NEG	NEG/NEG
2	9201079	340	440	30	9.3	40.5	67.5	132	749	NEG/NEG	NEG/NEG

TABLE 7.

LISTING OF RED BLOOD CELL UNITS IN THE PRODUCTIVITY STUDY

STUDY #	UNIT #	POST-WASH SUPERNATANT OSMOLALITY (mOsm/kgH20)	VOLUME (ml)	HCT (V%)	HB (gm/dl)	TOTAL CELL HB (g)	ESTIMATED IN VITRO RECOVERY (%)	SUPERNATANT HEMOGLOBIN POST WASH (mg/dl) DAY 0	DAY 7	BACTERIAL CULTURE AEROBIC/ANAEROBIC DAY 0	DAY 14
2	9201081	351	433	35	11	47.1	78.5	176	518	NEG/NEG	NEG/NEG
2	9201082	312	437	36	11.1	48.2	80.4	110	573	NEG/NEG	NEG/NEG
2	9201083	324	436	39	12.6	54.6	91.0	132	826	NEG/NEG	NEG/NEG
2	9201084	308	489	29	9.3	45.1	75.2	110	264	NEG/NEG	NEG/NEG
2	9201085	333	435	30	9.3	39.9	66.5	176	848	NEG/NEG	NEG/NEG
2	9201086	356	444	30	9.8	43.2	72.0	121	441	NEG/NEG	NEG/NEG
2	9201087	381	436	38	11.7	50.7	84.5	132	397	NEG/NEG	NEG/NEG
2	9201089	311	437	36	11	47.9	79.8	88	870	NEG/NEG	NEG/NEG
2	9201091	326	443	33	10.7	46.9	78.2	176	683	NEG/NEG	NEG/NEG
2	9201094	338	441	38	11.4	50.0	83.4	99	297	NEG/NEG	NEG/NEG
2	9201096	324	445	19	5.7	24.2	40.3	331	353	NEG/NEG	NEG/NEG
2	9201097	345	430	42	12.7	54.3	90.5	121	496	NEG/NEG	NEG/NEG
2	9201099	333	437	36	11.4	49.5	82.5	132	342	NEG/NEG	NEG/NEG
2	9201100	316	427	37	11.9	50.4	84.0	165	584	NEG/NEG	NEG/NEG
2	9201101	324	438	33	10.5	45.8	76.3	88	364	NEG/NEG	NEG/NEG
2	9201102	332	440	29	9.2	40.0	66.7	165	683	NEG/NEG	NEG/NEG
2	9201103	333	435	42	12.6	54.4	90.6	165	705	NEG/NEG	NEG/NEG
2	9201104	326	444	21	6.9	30.2	50.3	132	562	NEG/NEG	NEG/NEG
2	9201106	357	436	38	11.9	51.6	86.0	121	573	NEG/NEG	NEG/NEG
2	9201107	322	445	30	9.6	42.3	70.4	132	231	NEG/NEG	NEG/NEG
2	9201108	315	440	30	9.7	42.1	70.2	176	1190	NEG/NEG	NEG/NEG
2	9201110	335	451	29	9.7	42.8	71.3	297	859	NEG/NEG	NEG/NEG
2	9201114	336	431	39	11	47.1	78.6	110	408	NEG/NEG	NEG/NEG
2	9201116	344	441	38	12	52.7	87.8	99	485	NEG/NEG	NEG/NEG
2	9201117	320		41	13.2			110	661	NEG/NEG	NEG/NEG
2	9201118	315	440	42	13.4	58.7	97.8	99	573	NEG/NEG	NEG/NEG
2	9201123	352	431	27	8.6	36.4	60.7	220	397	NEG/NEG	NEG/NEG
2	9201124	330	441	40	12.2	53.3	88.9	165	1652	NEG/NEG	NEG/NEG
2	9201138	322	441	40	12.9	56.5	94.2	121	452	NEG/NEG	NEG/NEG
2	9201147	330	428	34	10.8	45.8	76.4	154	397	NEG/NEG	NEG/NEG
2	9201156	329	432	38	12.5	53.5	89.1	176	672	NEG/NEG	NEG/NEG
2	9201159	325	442	36	11.1	48.8	81.3	110	694	NEG/NEG	NEG/NEG
2	9201161	337	438	35	10.8	47.0	78.3	110	297	NEG/NEG	NEG/NEG
2	9201165	342	445	42	13.7	60.7	100.0	88	463	NEG/NEG	NEG/NEG
2	9201168	350	425	42	13	55.0	91.6	121	330	NEG/NEG	NEG/NEG
2	9201179	334	440	40	12.7	55.6	92.6	132	507	NEG/NEG	NEG/NEG
MEAN		339	426	36	11.4	47.9	79.6	177	612		
SD		37	18	6	1.9	8.4	13.7	121	279		
N	716	676	672	681	681	672	672	680	690		